

In the Matter of
Streamlining,

Which Way Will the Winds of Favor Blow?

by Joseph Geschelin

Engineering Editor, Automotive Industries

The 1934 Models Will Serve as Straws to Gage the Direction and Extent of Popular Fancy

CHRYSLER'S bold bid for public favor through the medium of wholly unconventional body lines has split engineers into two differing groups. At least that's what we gathered in many rounds of the New York Show and the comment of a number of chief engineers.

Is the interim car of 1934 to be as extreme as front engine mounting permits, or will it follow more conventional lines, frankly stressing functional limitations? The answer is not found in the Show exhibits, with their conflicting impression of mixed trends, ranging from extreme styling to body designs which were considered conventional in 1933.

No, the answer unquestionably lies in the public's reactions to the offerings at the Show. And the most telling argument will be the volume of sales for this or that car. If the Chrysler creations click with enough people,

that will be a trend, opinions of engineers and others to the contrary notwithstanding.

All of which is borne out by Athel F. Denham's prediction in *Automotive Industries*, last week, in which he hints at early model changes predicated upon the will-o-the-wisp of public opinion. The imminence of such early changes should make a discussion of car exteriors somewhat academic were it not for the possibility of profiting by a résumé of design features, some excellent, some not so good.

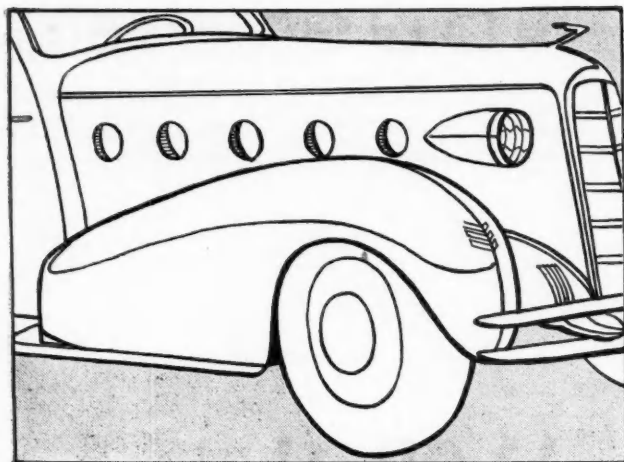
Realizing that the opinion of an engineer on matters touching art is just opinion, we made the rounds with a highly successful industrial artist whose sales record qualifies him to speak with some authority as to what the public may accept. Interestingly enough, he is inclined to favor a car ensemble frankly stressing the functional limitation of the front engine location as exemplified by the streamlined Packard, which he praised highly.

Nevertheless this artist was very much impressed by the general features of the Chrysler design, leaving some reservations as to details.

A quick glance at the cars in the low-price bracket indicates that no attempt has been made to change the basic body lines current in 1933 production. Our artist friend who seems to know something about what's going on behind the scenes has an idea that the next push



DeSoto Sedan—A Chrysler streamlined design



Porthole effect of hood louvers on new LaSalle. Novel fender treatment embodying high blunt ends with effect of mortising the running board is common to both LaSalle and Cadillac.

is coming in this price class.

Coming down to cases, there is a multitude of detail in car exteriors of more than passing interest to the critical observer. In general, bodies are stressing smoother, simpler lines, with a prevalence of sloping back panels, notably in the case of the Silver Arrow, Packard, the Studebaker Land Cruiser, Hupp, and one of the Auburns. More and more the utility and beauty of concealing certain attachments such as lamps, horns, license plates and tires, is being appreciated.

Hudson, LaSalle, Cadillac, as well as the streamlined Packard, conceal the spare in the rear deck, cleaning up the exterior in a handsome fashion. Hupp goes part way by recessing the spare in the back panel. Chrysler, DeSoto and Hupp have done the most effective job of cleaning up the front end by sinking all front lamps in the hood structure.

Speaking of the spare tire, there is an unhappy incongruity in the practice of mounting the spares in front fender wells or on the back panel, considering how much stress is laid on streamlining. Front fender spares seem to detract a lot from the appearance of at least two otherwise handsome jobs, while the rear tire mounting just didn't harmonize with the general profile of the fully streamlined bodies with sloped backs.

Both Studebaker and Auburn carry out the principle that streamlining is not just a matter of profile in the vertical plane. On these jobs streamlining is carried into the horizontal plane, giving an exceedingly graceful appearance when viewed head on. Studebaker carries this idea through to the skirts of the front and rear fenders in the form of an appropriate turn-under. Packard goes still further on its

streamlined job by closing the fenders underneath in the form of a compartment, front and rear.

But LaSalle chooses to blaze its own path. Whereas the modern conception of streamlining favors a blunt front as approached by Chrysler, LaSalle has introduced an extremely narrow radiator front, almost pointed. How these lines show up in a wind tunnel we don't know, but the LaSalle front end is graceful, most interesting, and reminiscent of Indianapolis racers.

General Motors also has struck a refreshing note in hood louver treatment on the Cadillac, LaSalle and Pontiac. This detail attracted much favorable comment, particularly in its development on the Cadillac, where the engine designation, i.e., V-8 or V-12, is tastefully introduced into the design.

Then, too, we find a fresh note in the fender design of both Cadillac and LaSalle. The sharp, parting line across the front of the front fenders is accentuated on LaSalle by a long, sharp crease down the center and a set of chromium-plated chevrons. Another point of interest is the stubby end of both front and rear fenders with bright molding carrying out the impression that the running board is morticed deeply into the fender.

Incidentally, Cadillac and Au-

burn are the only jobs featuring a snowplow prow which you can't miss, since it's bright from top to bottom. And Packard is the only one with a straight up and down radiator without metal fairing around the front, even on the streamlined model.

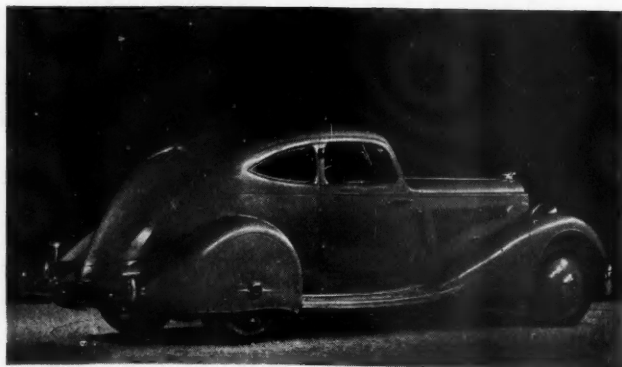
Lighter, brighter colors predominate on show models to the exclusion, in fact, of any other note; whether this will apply to production jobs is largely a matter of public fancy. All-one-color combinations seem to be an almost universal rule, with only a hint of molding and a foil of thin, contrasting striping.

Color has almost universally embraced headlamp bodies, radiator shells, various brackets, tire mountings and covers, etc. While chromium-plating has been displaced at these points, at least temporarily, the bright finish has found its sphere in other directions. Thus the radiator front is edged with bright molding, frequently with a complete bright front, as in the case of Auburn, Cadillac and others. Nash and Hudson use a chromium-plated housing for the fender lamps, front and rear. Larger radiator ornaments, large hub caps, and a preponderance of metal wheels account for their share of bright plating. And in addition there is a wider use of bright molding in achieving decorative effects.

You will note a wider use of bright molding for edging the running board, as in the case of Graham, Packard, Cadillac, Buick and others. Then there is the striking effect of bright molding laid on the hood louvers of the Buick. Bumpers are presenting increasingly larger bright areas, going to double bars on Packard, Cadillac and LaSalle. Hupp adds a cunning touch in using a colored sheet metal strip to close the space between the rear bumper and the tail of the body.

Nothing at the Show points to the use of either concealed door hinges or recessed exterior hard-

Streamlined Packard model blends characteristic front end lines with streamlines back of the cowl. Spare is carried in back panel compartment. Ends of fenders are carried under to form closed compartment.



ware. With the growing emphasis on streamlining something should be done about these details. Last year's Silver Arrow with its recessed door handles was able to present a truly smooth exterior undisturbed by protruding hardware. Moreover, with streamlining in the horizontal plane, the increased curvature above and below the belt line seems to demand concealed hinges as a practical means of ridding the exterior of protruding metal.

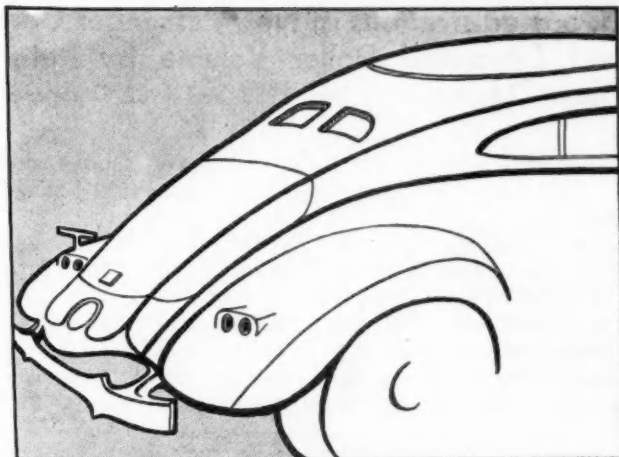
Certain streamlined door handles filled us with great disappointment. We have in mind the ones that faced the wrong way, sharp point to the front, not that it really makes much difference under 150 miles per hour.

Oddly enough, ornamentation has increased with simplification of body lines. Radiator ornaments weigh more this year and are supplemented in a number of cases by another ornament or name plate attached to the radiator shell. Then there are the embellishments laid on the rear wheel cover plates. Incidentally, Graham has a new ornament somewhat along the lines of last year's, except that instead of a simple line motif, it incorporates conventionalized heads of the three brothers.

Pierce-Arrow has a very large radius of curvature at the front fender. Both Oldsmobiles, the six and eight, have abandoned the hinged, streamlined hood louvers we admired so last year and have substituted fixed, stamped louvers of approximately the same form.

It may be noted in general that sheet metal surfaces are smoother and more suave, with a minimum of deep, narrow air spaces such as were found between the front fender and hood. Front fenders now fair more closely with the hood, practically eliminating the air

Rear deck of the 1934 Silver Arrow showing the tapered tail surface. Rear fender lamps are a part of the fender.



spaces and gradually decreasing the size of the hood opening. Thus hood doors have altered in form, from rectangular to about triangular, giving the service man something to think about.

It may be well to mention in passing that specific precautions must be taken to abolish any possibility of drumming on constructions using wider sheet metal housings at the front end. Perhaps a sprayed liquid deadener may be found desirable.

Rear window designs on some of the sloped back panels are rather ingenious. At present, due to functional requirements, the plane of the rear window is noticeably out of line with the slope of the panel, causing a sharp break in the smooth curve. While it is questionable whether this can have any practical effect upon the efficiency of the streamlining, it might bear a change if practicable.

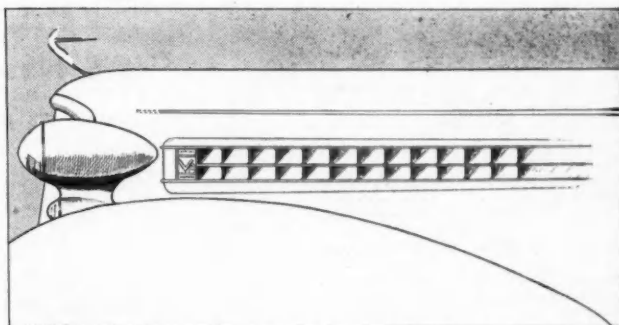
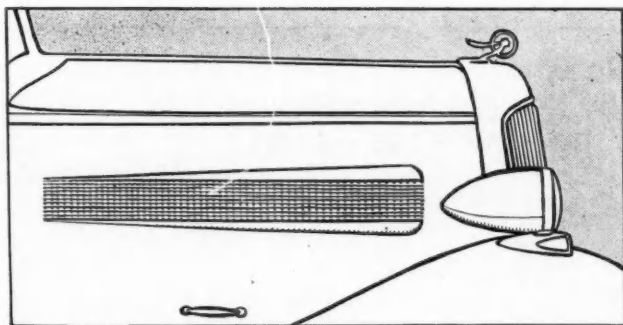
New Fiat Balilla

THE Fiat Company of Italy is reported to be planning to exhibit an improved model of its Balilla small car at the Milan Spring Fair of 1934. The Balilla,

which was first brought out in 1932, was named for the Italian youth movement. Among the improvements to be incorporated in the new model are four doors instead of two, four gear speeds instead of three, bodies 2 in. longer, giving more rear-seat leg room, safety glass for all windows, and streamlined bodies. The price is expected to remain the same (14,000 lire, equal to \$1,190 at current rates of exchange) as that of the current model.

Lower Taxes Double Output

ASSISTANT Trade Commissioner Rolland Welch reports from Berlin that as a result of the tax-exemption of new automobiles, which was decreed by the Government on April 1, last, automobile production in Germany during the half year which ended Sept. 30, 1933, was double that of the like period in 1932, and the output of motorcycles and three-wheeled vehicles also increased. Exports of passenger cars during the six-month period amounted to 6575, as compared with 4585 during the same period the previous year, while 1000 cars were imported, compared with 763.



Left—Pontiac treats hood louvers along the lines of the Cadillac except that the general effect is a fine mesh bright-plated grille, and, right, Cadillac introduces fresh note in hood louver treatment. Model designation applied in color at front end. Long lamp bodies carry out the general lines of the exterior. Note small parking lamps mounted directly under the headlamps.

U. S. Registrations of New Passenger Cars and Estimated Dollar Volume by Retail Price Classes—11 Mo. 1933 and 1932 Compared

		Units	Per Cent of	Total	Per Cent Change
	1933	1932	1933	1932	
Chevrolet, Ford and Plymouth	994,754	662,396	69.4	63.3	+ 50.0
Others under \$750	242,390	80,798	16.9	7.7	+200.0
\$750-\$1000	109,702	179,180	7.6	17.1	— 38.8
\$1000-\$1500	55,982	73,675	3.9	7.0	— 24.1
\$1500-\$2000	11,813	25,375	0.8	2.4	— 53.3
\$2000-\$3000	14,401	18,049	1.0	1.7	— 20.0
\$3000 and over	5,030	7,976	0.4	0.8	— 37.0
Total	1,434,072	1,047,449	100.0	100.0	+ 37.2
Miscellaneous	1,098	3,267			
Total, 11 mos.	1,435,170	1,050,716			

	Estimated Dollar Volume				
			Per	Per	
	1933	1932	Cent of	Total	Cent
			1933	1932	Change
Chevrolet, Ford and Plymouth	\$548,000,000	\$390,000,000	58.4	48.3	+40.3
Others under					
\$750	159,000,000	55,000,000	16.9	6.8	+189.0
\$750-\$1000	92,000,000	156,000,000	9.8	19.3	-41.0
\$1000-\$1500	66,000,000	89,000,000	7.0	11.0	-25.8
\$1500-\$2000	20,000,000	43,000,000	2.1	5.3	-53.5
\$2000-\$3000	35,000,000	46,000,000	3.7	5.7	-24.0
\$3000 & over	20,000,000	29,000,000	2.1	3.6	-31.0
Total, 11 mos.	\$940,000,000	\$808,000,000	100.0	100.0	+16.5

U. S. Registrations of New Passenger Cars and Estimated Dollar Volume by Retail Price Classes—Nov., 1933 and 1932, Compared

	Units		Per	Per	
	1933	1932	Cent of	Total	Cent
			1933	1932	Change
Chevrolet, Ford and Plymouth	65,381	28,909	69.5	65.9	+126.0
Others under \$750	17,489	4,655	18.7	10.6	+276.0
\$750-\$1000	6,713	5,641	7.1	12.9	+ 19.1
\$1000-\$1500	2,489	2,412	2.6	5.5	+ 3.2
\$1500-\$2000	577	893	0.6	2.0	— 35.3
\$2000-\$3000	1,255	711	1.3	1.6	+ 76.5
\$3000 and over	226	672	0.2	1.5	— 66.4
Total	94,130	43,893	100.0	100.0	+114.5
Miscellaneous	50	465			
Total Nov.	94,180	44,358			

	Estimated Dollar Volume				
			Per	Per	
	1933	1932	Cent of	Total	Cent
			1933	1932	Change
Chevrolet, Ford and Plymouth	\$37,000,000	\$17,000,000	58.7	50.0	+118.0
Others under \$750	12,000,000	3,000,000	19.1	8.8	+300.0
\$750-\$1000	6,000,000	5,000,000	9.5	14.7	+ 20.0
\$1000-\$1500	3,000,000	3,000,000	4.7	8.8	None
\$1500-2000	1,000,000	2,000,000	1.6	5.9	— 50.0
\$2000-\$3000	3,000,000	2,000,000	4.8	5.9	+ 50.0
\$3000 and over	1,000,000	2,000,000	1.6	5.9	— 50.0
Total Nov.	\$63,000,000	\$34,000,000	100.0	100.0	+ 85.2

New Passenger Car Registrations

11 Months 1933 and 1932, Compared by Census Zones

	Per Cent Increase 1933 over 1932*
Maine	14.8
New Hampshire	21.0
Vermont	6.3
Massachusetts	25.0
Rhode Island	36.4
Connecticut	40.0
New England	26.1
New York	18.0
Pennsylvania	28.8
New Jersey	19.5
Middle Atlantic	21.7
Delaware	30.3
Maryland	13.0
Dist. of Columbia	9.0
Virginia	7.0
North Carolina	90.8
South Carolina	118.0
Georgia	72.2
Florida	31.5
West Virginia	55.0
South Atlantic	41.5
Ohio	58.1
Indiana	33.5
Illinois	36.6
Michigan	44.5
Wisconsin	10.3
East North Central	41.1
Minnesota	25.0
Missouri	17.0
Iowa	40.0

	Per Cent Increase 1933 over 1932*
North Dakota	31.1
South Dakota	20.2
Nebraska	43.5
Kansas	63.0
West North Central	31.5
Kentucky	47.8
Tennessee	74.5
Alabama	75.8
Mississippi	78.2
East South Central	66.0
Arkansas	62.1
Louisiana	49.7
Oklahoma	69.8
Texas	80.5
West South Central	72.3

	Per Cent Increase 1933 over 1932*
Montana	47.2
Idaho	58.0
Wyoming	21.8
Colorado	15.0
New Mexico	62.0
Arizona	44.6
Utah	68.0
Nevada	None
Mountain	34.3
Washington	48.0
Oregon	54.3
California	38.8
Pacific	41.0
United States	36.6

* — = Decrease.

U. S. New Car Registrations and Estimated Dollar Volume by Manufacturing Groups

Eleven Months 1933 and 1932

	Percentage of Total Units		Percentage of Total Estimated Dollar Volume	
	1933	1932	1933	1932
Chrysler Corp.	25.6	16.9	23.9	16.8
Ford and Lincoln	20.5	23.8	18.0	18.7
General Motors	44.1	42.1	45.4	41.2
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Total	90.2	82.8	87.3	76.7
All Others	9.8	17.2	12.7	23.3
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Total	100.0	100.0	100.0	100.0

JUST AMONG OURSELVES

Quality Censorship Is Proposed

QUALITY standards to which manufacturers would be forced to conform are urged by the Consumers Advisory Board of the NRA in a report recently submitted. Shadows of Stuart Chase's book, "Your Money's Worth," and of the Consumers research organization which grew out of the doctrines promulgated therein—play fitfully through many paragraphs of this recommendation which looks to the setting up of a staff of technical experts to carry on the work of "quality information."

While the automotive industry is not directly mentioned in the products touched on by the report, automotive men should become immediately interested in so drastic a program as the one proposed. Like some other elements of the "New Deal," the proposal is difficult to rebut in principle, but almost obviously full not only of difficulties from an administrative standpoint, but also of practical possibilities for creation of injustices as large as those which it sets out to correct.

The following quoted paragraphs indicate clearly and frankly the kernel of the proposal:

"The consumer is far less able to judge of quality today when goods are very numerous, highly fabricated and sold under thousands of brand names and advertising slogans than he was when goods were relatively few, simply fabricated and familiar to him through his direct experi-

ence in producing and handling them. It is already established practice for governmental agencies, industrial concerns and large buyers to purchase according to specifications. The small producer should, as far as possible, be placed in a position to use his limited funds to equal advantage.

"Adequate standards designed to inform the consumer as to what he is buying are not available for the bulk of products purchased at retail. 'Producers are expert in their own commodity field,' according to the Bureau of Standards, 'but seldom is the consumer given full benefit of this knowledge. Under present conditions this group knowledge is suppressed and the tendency is all too frequent to give the buyer merely what he asks for.'"

Just how the average consumer could assimilate the expert knowledge which producers have in their own commodity field, remains a mystery, so far as we are concerned. Background knowledge is essential to understanding; that background knowledge is and always will be lacking. The best that could be hoped for from any such plan would be to develop a public confidence in the O.K. or approval placed on a given product by the supposedly impartial agency which might be set up. The technical whys and wherefores of the approval never would be understood by the mass of consumers.

Under present conditions the public accepts the statements of reputable manufacturers about

their own products. Sometimes the public has found this confidence misplaced, but over a period of time it is justified because those manufacturers who do not merit that confidence eventually are found out and change their ways or go into the commercial discard.

Obviously, so broad and important a subject cannot properly be argued here in a few paragraphs, but the filing of this particular report renews the need for full discussion of a topic which made headline material for the merchandising papers several years ago.

* * *

A Rear Engine Car at the 1935 Show

TATRA automobile factory in Czechoslovakia, we hear, has a 1934 model which carries an 8-cyl., four-cycle engine of 3000 cu. cm. displacement behind the rear axle. It will be the first engine-in-the-rear car produced in that country.

Wonder when the first rear-engined car will make its appearance on the American market? And who will be selling it?

The strongly emphasized streamlining of many 1934 cars inevitably has given new strength to speculations about moving the engine to the rear. We will be more surprised than not if a rear-engined car isn't announced by somebody before the opening of the New York show in 1935. It seems almost inevitable that there will be such a job there.

Much will depend, probably, on the public reception given this year to the most radically streamlined models. Personally, we don't think that particular factor should weigh too strongly.

N. G. S.

Mercedes and Hansa Bring Out Small Rear-Engined Vehicles

Former is a four with tubular frame while the latter is powered with a two-cylinder, two-stroke cycle engine

by Edwin P. A. Heinze

Berlin Correspondent, Automotive Industries

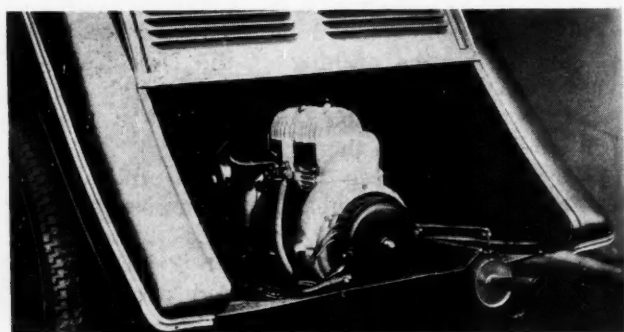
TWO German manufacturers within the last few weeks have placed on the market small cars with rear-mounted engines, one of these being none other than the Daimler-Benz Company, the oldest manufacturer of automobiles in the world. Daimler-Benz scored a notable success by its adoption of coil suspension springs on a small, low-priced car which it introduced late in 1931. The company simultaneously entered a new price field, the new car selling at around \$1,000, which was materially lower than the price of any previous car which had carried the Mercedes trade mark. The new system of suspension proved so satisfactory that it was later applied also to other lines of the company.

Now Daimler-Benz has entered a still lower-priced field with a car having a rear-mounted engine and a tubular backbone instead of a frame, and independent suspension on coil springs at the rear. The size of the car may be judged from the fact that it has a tread of 50 in., a wheelbase of 98½ in. and a four-cylinder engine with a displacement a trifle less than 80 cu. in., which is said to develop 26 hp. at 3400 r.p.m.

The tubular backbone is gaining in favor in Continental Europe, on account of its great rigidity and its low cost of production. At the rear end the tube is joined to a fork on which the powerplant is carried. Back of the engine there is a bolted-on cross member connecting its two

prongs. Final drive is by worm and wheel, which, by placing the engine crankshaft extension inside the worm shaft, makes it possible to mount the transmission ahead of the axle, thus reducing the overhang at the rear. So-called oscillating axles are used, sufficiently well anchored in the differential housing to be able to take driving and braking stresses, and there is a single coiled spring between the outer end of the axle housing and a frame member on each side, the one on the near side being plainly visible in the chassis illustration.

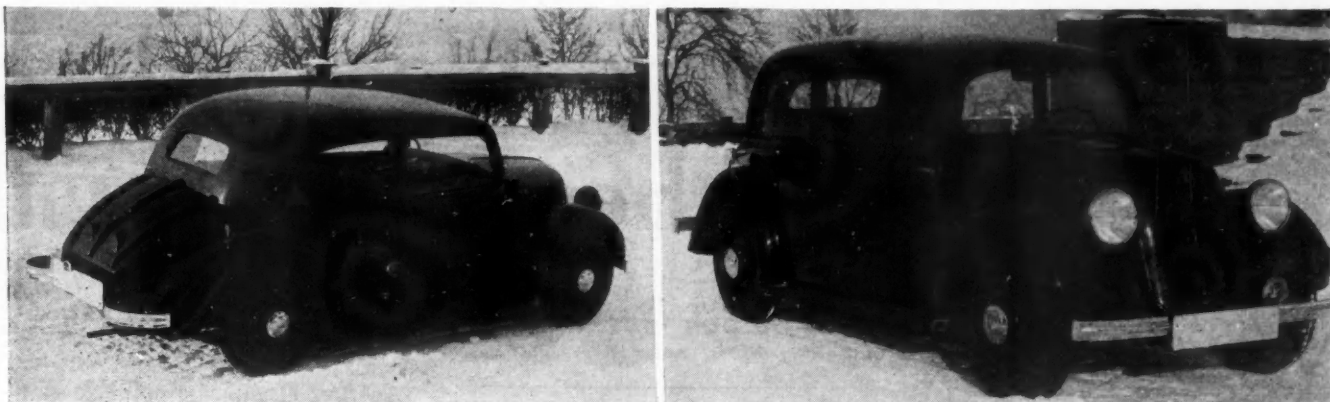
The radiator is arranged directly over the differential housing, slightly to one side, and has the fan behind it, the fan shaft being mounted in bearings at the side of



The rear-mounted, two-cylinder, two-stroke power plant in the Hansa has a displacement of 24.5 cu. in. and develops 11-12 hp. at 3500 r.p.m.



Three-quarter front view of rear-engined Hansa. The wheelbase is 94½ in. Body is of plywood. Wheels are independently sprung all around.



Two views of the four-cylinder, 98½-in. wheelbase, rear-engine Mercedes. The space under the dummy hood contains a spare wheel and tool box. Note the louvres under the rear quarter window through which air enters passages within the body leading to the radiator

the cylinder head and driven by a belt at the rear of the engine.

The front-end arrangement is similar to that of the next larger Mercedes (of 104 cu. in. displacement), with two transverse springs supporting the steering heads, except for changes necessitated by the use of the tubular backbone. Gear changes are made by a conventional shift lever operating through a rod extending along the top of the backbone into the cover of the transmission housing. The floor level is below the top of the backbone and there is therefore a sort of central tunnel in both the front and rear compartments.

The whole powerplant is located under a hood extending rearward from the downswept roof of the body, into which the engine compartment projects for some distance. Rear fenders are welded to the body panels, which sweep inward at the rear, and there are louvers in the panels over the fenders. As a matter of fact, these extend some distance forward of the rear-seat back. A passage is formed between the body panels and the inner sheathing at this point, through which the air is drawn toward the radiator. The air leaves the engine compartment through long slots in the top of the hood, which are covered by moldings leaving a space of ¼ in. in between them and the hood. The engine compartment is completely closed off from the interior of the body.

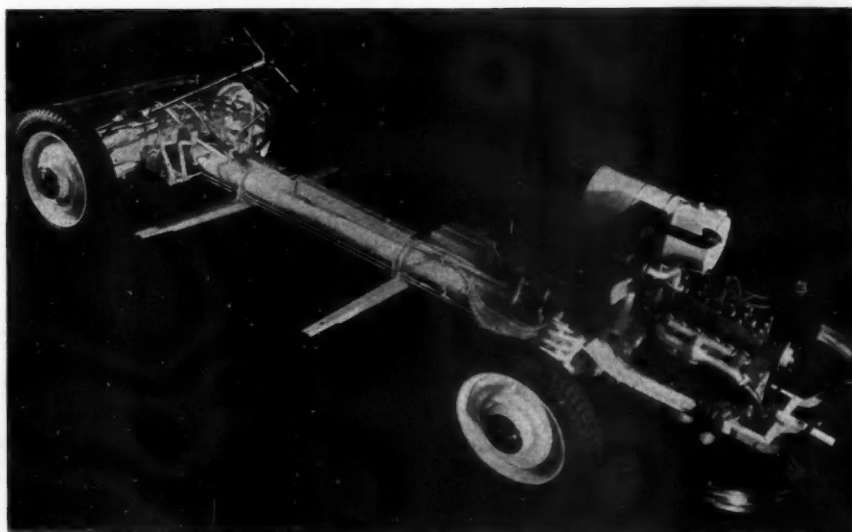
Owing to the absence of the usual radiator, it was a difficult task for the designer to give the front end an appearance which we have come to regard as attractive. A dummy radiator might have been used, but many people object to such make-shifts. The solution shown by the

accompanying photograph does not appear entirely happy until one regards it entirely objectively and asks himself why it should not appeal as much as any other design, especially in view of its essentially practical character. Under the hinged front hood there is space for a spare wheel and a tool box, and some remaining space for luggage. Additional luggage can be stowed away on a shelf between the back of the rear seat and the back of the body.

The other small car with rear-mounted engine is by Hansa-Lloyd and Goliath Works of Bremen. It is still smaller than the Mercedes, having a tread of 45¼ in., a wheelbase of 94½ in., and a two-cylinder, two-stroke engine of 24.5 cu. in. displacement (2.4 in. bore by 2.68

in. stroke). The engine is a stock product, the Ilo, made in Pinneberg, Holstein. It is air-cooled by means of two blowers driven from the projecting end of the crankshaft. Between 11 and 12 hp. at 3500 r.p.m. is claimed. The engine is located back of the rear axle; it is completely within the body lines and is made accessible by raising a cover plate. The body is made of plywood, with a covering of artificial leather. Both front and rear wheels are independently sprung by means of transverse leaf springs taking the place of rigid axles.

This car, for which a maximum speed of 43 m.p.h. and a fuel mileage of 33-36 miles per U. S. gallon is claimed, is to be sold in Germany for \$630 at the current rate of exchange (\$400 gold).



The frame of the Mercedes is a large tube with a fork at the rear end in which the power plant is mounted. Two transverse leaf springs are used at the front, while at the rear coil springs are employed

Dependable Tools of Now Being Made with

WHILE cemented-carbide tool tips have become a common part of the production department's thinking, it may be of interest to note the widespread use of these materials in tipping special and intricate tools of every description. This angle of the situation is so impressive that we have arranged in this article to show a few outstanding examples out of a great mass of material offered by the experience of manufacturers in this field.

In the opinion of the Carboloy Company, much of the success of the recent applications of cemented-carbide tooling lies in developmental work which has yielded so steady an improvement in the quality of the brazed joint that today a braze failure is a rare occurrence even on jobs subject to unusual stress.

Moreover, whereas at the outset the shank material was confined practically to one type of steel, there is now available an ample range of steels which not only permit a strong braze but also meet all requirements of toughness or hardness. High-speed-steel, once quite difficult to braze successfully to these tool tips, can now be used, with few exceptions, for the shank material.

Thus cemented-carbides can be used to tip not only the grades of

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tool steel used in drills, reamers, etc., but in some cases also can be applied to nitrided shanks. Another forward step was taken when a wide variety of grades of cemented-carbides suitable for specific metal cutting conditions was made available.

Even a brief resume of current applications gives evidence of an amazing variety as may be noted from the following list: reamers, drills, forming tools, broaches, spot facers, counterbores, step tools, milling cutters, hollow mills, and inspection gages where long life and extreme accuracy are essential.

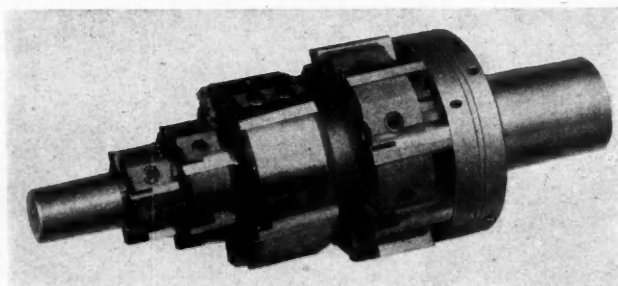
So far as speeds and feeds are concerned it is practically impossible to give any definite tabular data because of the diversity of operations and special requirements of individual jobs. Of course much of this information has been published during past few years and consequently need not be repeated here. It has been suggested by the Wesson Company, for example, that speeds and feeds depend largely upon the amount of material to be removed in one cut. Therefore they start a new job by doubling the speed commonly used with high-speed-steel tools, reducing the feed

by about 25 per cent and then adjusting both values to where they belong.

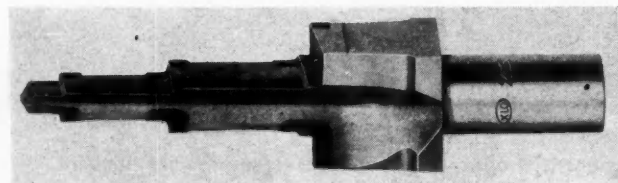
Another significant point is that whereas, originally it was thought necessary to have highly lapped and polished cutting edges, nearly everyone agrees that most of the lapping can be dispensed with, except for finishing cuts and on boring tools.

To bring out the scope of cemented-carbide tooling we have selected some examples from tools made by several companies specializing in this field. Obviously this is but a small sample of what has been done and the activity is by no means confined to the organizations mentioned in this article.

Fig. 1 to 3 have been selected from a large variety made by Ex-Cell-O. Fig. 1 shows a combination reamer and facing tool with four sets of inserted tungsten carbide tipped blades. Each set of blades is adjustable edgewise and radially for maintaining correct relation of steps as well as to permit resharpening. On the front end a roller pilot is provided, while on the driving end is a conventional shank. The first three sets of blades on the front end are of the serrated type which permits adjustment by moving the number of serrations required. The blades on the largest diameter are moved forward by

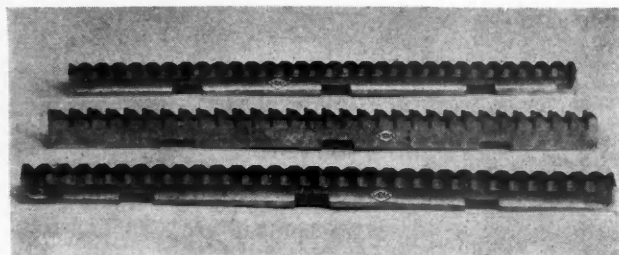


Upper left, Fig. 1—Combination reamer and facing tool tipped with cemented-carbide by the Ex-Cell-O Aircraft & Tool Co.



Lower left, Fig. 2—Combination boring, chamfering, and facing tools with six stepped cemented-carbide tips made by Ex-Cell-O.

Right, Fig. 3—Broaches for certain jobs now tipped with cemented-carbide. (Courtesy Ex-Cell-O Aircraft & Tool Co.)



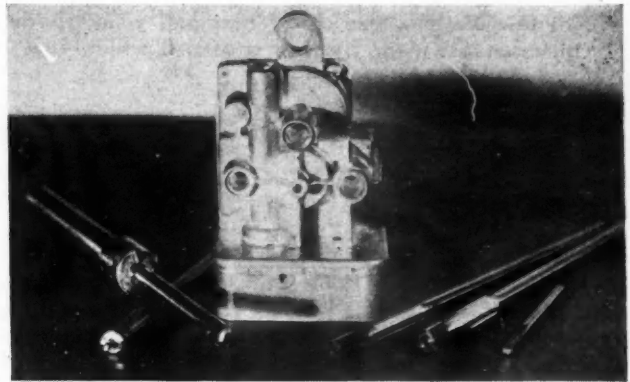
f Intricate Design Are n Cemented-Carbide Tips

means of the double lock nuts at the shank end of the cutter. As the blades move forward they are automatically expanded radially, since the bottom of each slot is inclined with respect to the center line of the tool. When the correct diameter is obtained, each blade is locked in position by means of tapered wedges locked with screws.

In Fig. 2 we have a combination boring, chamfering and facing tool which was designed for machining brass valve bodies. Simultaneously, operations on seven diameters, three faces and three chamfers were performed with this tool. Six stepped tungsten carbide tips are used in making each of these tools.

A broach designed for cutting a rectangular hole through a cylinder which was located transversely to the axis in a die-cast part is illustrated in Fig. 3. The first two tips of the broach finish the ends of the hole, while the remaining two tips finish the other sides of the rectangular opening. The latter tips are on an incline to prevent collapse

Fig. 4—Complete tooling for a zinc base alloy die casting developed by the Firth-Sterling Steel Co.



of the tube while work is being performed. The front and rear-end pilots are hardened and ground to prevent wear. A suitable slot is furnished in the rear for anchoring to the machine.

From Firth-Sterling we have an example of a complete tooling for a zinc base alloy die casting. Reading from left to right in Fig. 4, these tools are: a two-lipped spot face, a combination reamer, counterbore and spot face made in such a way that it can be disassembled, a three-lipped helical flute reamer necessary because the hole it reams has two square oil grooves diametrically opposite, a three-lipped straight flute reamer and a two-lipped straight flute reamer of extremely small size. No tool life or production data are available on this operation at the present time.

An interesting set of broaching tools, Fig. 5, were made recently by Thos. Prosser, incorporating Widia tips. The tolerance on each tooth was held to plus or minus, 0.0001 in. The special Widia-tipped form cutter in Fig. 6 is also a product of this company's activity.

A somewhat different type of application by the Tungsten-Carbide Tool Co., is found in Fig. 7 which shows a special center for high speed grinding, used on a Norton grinder. It is made of Firthite "H" metal. The company using this center, has tried regular high speed steel, and Nitrided steel centers. The work had to be held very accurately, a 0.001 in. runout being the maximum allowance. The

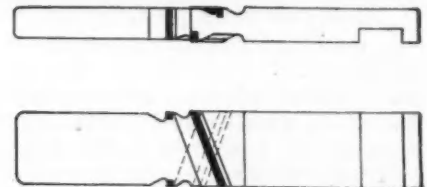


Fig. 5—Thos. Prosser & Son offer some examples of cemented-carbide tipped broaches



Fig. 6—Special Widia tipped form cutter made by Thos. Prosser & Son

average life was as follows, taken on ten test runs:

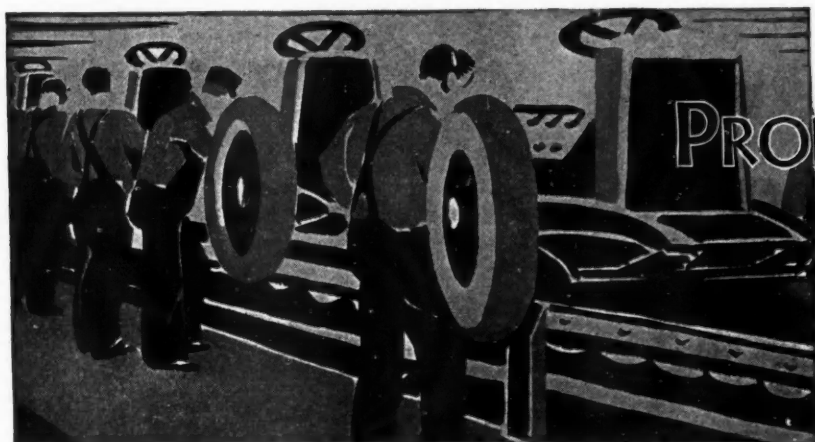
High Speed Steel	
Average	1 hr. 10 min.
Nitrided Steel	10 hrs. 22 min.
Firthite "H"	72 hrs. 46 min.

The tool cost, due to grinding so frequently, was reduced from an average on the Nitriding, which they had adopted, of 20c per hundred to around 3c per hundred. Firthite has been running on this job for a period of 22 months, with no tool trouble, according to the manufacturer.

Another job handled by this company is a combination counterbore and chamfer tool, Fig. 8, made of Firthite "H." This tool is used on cast iron with a heavy carbon content. The hole is roughed, leaving stock for finishing and ran as follows: The former tool, a good

List of Producers of Cemented Carbide and Hard Metal Tools

(From Automotive Industrial Red Book)
 Armstrong Bros. Tool Co., 340 N. Francisco Ave., Chicago, Ill. "Armide." (High-speed steel & carbide.)
 Carboly Co., 2481 E. Grand Blvd., Detroit, Mich.
 Continental Tool Works, 1220 Oakman Blvd., Detroit, Mich. "CTW."
 Crafts & Co., Arthur A., 161 Brookline Ave., Boston, Mass.
 Davis Boring Tool Co., Div. of Larkin Packer Co., 6200 Maple Ave., St. Louis, Mo. (Boring.)
 Desmond-Stephan Mfg. Co., 317 S. Walnut St., Urbana, Ohio.
 Dessau, Maurice S., 6 Maiden Lane, New York, N. Y.
 Firth-Sterling Steel Co., Demmler St., McKeesport, Pa. "Diamondite." (Tungsten carbide.)
 Gairing Tool Co., 1629 Lafayette Blvd., Detroit, Mich.
 Haynes Stellite Co., 30 E. 42d St., New York City.
 Kearney & Trecker Corp., 60th & National Aves., Milwaukee, Wis.
 Ludlum Steel Co., Watervliet, N. Y.
 Michigan Tool Co., 717 Six Mile Rd., E., Detroit, Mich.
 O. K. Tool Co., 33 Hull St., Shelton, Conn.
 Prosser & Son, Thomas, 16 Gold St., New York, N. Y. "Widia." (Tungsten carbide; "Ti-Tex" cemented carbide.)
 Tungsten-Carbide Tool Co., 7175 Six Mile Rd., Detroit, Mich. (Tungsten carbide and tantalum.)
 Vanadium-Alloys Steel Co., 2400 Grant Bldg., Pittsburgh, Pa.
 Wesson Co., 1050 Mt. Elliott Ave., Detroit, Mich. (Tungsten carbide.)



PRODUCTION LINES

In which we cover the by-ways of the Auto Show

Draw Crowds

It's a toss up whether the DeSoto marionettes or the Plymouth acoustical wonder from the Chicago Exposition stopped the show in New York. DeSoto's stage was jammed all the time, overflowing into the booth of a less fortunate exhibitor. Plymouth claims that about 4500 a day put on the earphones at their mystery exhibit. We didn't count them but they certainly stood in long enough lines every hour of the day.

Eye Appeals

This show was different. Quite unlike other years, this trip the folks didn't do much hood lifting. Apparently many people simply accepted mechanical design and based their likes or dislikes on the outward appearance.

An Answer

Where mechanical design on heavy duty installations imposes unusually high bearing or gear tooth pressures why can't the unit be protected by regular inspection periods, asks an E-P expert. Since the operation usually is attended by high temperatures, why can't we protect the unit by installing a temperature indicator on the dash, he adds. If the temperature goes above a certain predetermined point, the driver should investigate.

There is an impression abroad that the temperature in some rear ends on heavy duty jobs goes up above 400 deg. F.

Gadgetry

As if in concert, ornamentation seems to have run riot. Radiator ornaments are bigger and better perhaps to justify the extra cost. Not only do we have doodads on the radiators but they've snuck them in on the radiator fronts. And in many cases the customer is treated to more in the way of resplendent designs spread over the rear wheel cover plate. Simplicity in detail is perhaps not the watch word.

Full Streamline

Birggs cashed in for an unusual lot of attention with the streamline model. It invariably appeals wherever shown, as for example at the Ford Exposition some time earlier.

Elucidatorial

Take chassis elucidators. One of them, demonstrating a well-known eight, said, "Knee-action wheels have finally enabled our company to use a frictionless steering gear." Evidently engineers have been pinning for years for a chance to use mechanisms with zero backlash and zero friction.

More Elucidators

In several spots the chassis elucidators had a definite problem. They had to say for instance, "Our body styles are not extreme. They're modern and in good taste." Which reminds us that one chief engineer remarked to us that everybody does not change their mind at the same time.

Golden Ladies

Studebaker had a couple of striking golden ladies holding down the throne as well as the fender of one of the cars. Said golden ladies seem to have made quite a hit with the customers, at least they were unusually interested in the fender layout.

Naïveté

Another chassis elucidator wasn't the least feased when asked why his new model didn't have free-wheeling. "Why this job has centerpoint steering! We don't need free-wheeling." We nominate this one for the yearly Bone of Fame.

Losing Out

Some of the accessory people who cleaned up last year selling bumper guards will be disappointed. Many cars now show these vertical guard attachments both front and back. No doubt the utility of such devices has been officially recognized what with the absence of standardized bumper height. Incidentally what has become of the standards activity in this direction?

—J. G.



Law Sanctions Works Council Plan Teagle Committee Report Contends

Urges their continuance as collective bargaining instruments under N.I.R.A.—Holds prevention of jurisdictional disputes one of main advantages

WALTER C. TEAGLE, chairman, Industrial Relations Committee of the Business Advisory and Planning Council for the Department of Commerce, in a report just released by the Council, strongly advocates the continuation of employee representation plans as an instrument for carrying out the collective bargaining provisions of the N.I.R.A.

Mr. Teagle backs up his recommendations with a quotation from the joint statement by General Johnson and Donald A. Richberg, Aug. 23, 1933, in which the collective bargaining provision was interpreted in part as follows:

"Employers, likewise, can make collective bargains with organized employees, or individual agreements with those who choose to act individually; provided, of course, that no such collective or individual agreement is in violation of any state or Federal law, but neither employers nor employees are required, by law, to agree to any particular contract, whether proposed as an individual or collective agreement."

"The law does not prohibit the existence of a local labor organization, which may be called a company union, and is composed only of the employees of one company. But it does prohibit an employer from requiring as a condition of employment that any employees join a company union, and it prohibits the maintenance of a company union, or any other labor organization, by the interference, restraint or coercion of an employer."

Mr. Teagle therefore concludes that, "it is clear that the law itself and its official interpretations fully sanction employee representation as a form of collective bargaining. The only limitation is that this method must be the free choice of the employees themselves, who are protected by the statute against any form of coercion by employers in deciding whether or not they will have collective bargaining, and, if so, who shall be their representatives."

The Council's report will be viewed with great interest in the light of the recent attacks on employee representation plans by Labor spokesmen as well as the National Labor Board,

particularly in proceedings with Weirton and Budd.

According to Mr. Teagle, "employee representation provides a method of collective bargaining between management and employees through their own elected representatives. To function to the best advantage, such spokesmen should be selected from among the plant employees, and this has been the usual practice. The theory of representation rests upon the foundation of community of interest within a business enterprise."

"The law forbids requiring membership in a company union as a condition of employment. Such organizations should not be confused with representation plans or company unions which do not have any such requirement and where participation is on a purely voluntary basis."

"The first essential to the success of any representation plan," said Mr. Teagle "is that it shall be desired by and voluntarily accepted by the employees, and the second essential is that it shall have the unqualified support of the employer. A representation plan does not turn over to employees the responsibilities of management, but it should definitely provide that such matters as wages, hours, working conditions and other items of mutual interest shall be settled by collective bargaining between management and the duly elected representatives of the employees concerned."

"In harmony with these primary purposes, a plan of employee representation sets up machinery for direct collective dealing between management and representatives elected by employees. Elections are conducted by the workers through secret ballot free from interference or influence by the employer. These elections are held at places and times convenient for the employees. No officials or others identified with management may vote for or serve as employee representatives. The representatives have the right to hold meetings of their own, distinct from the joint conferences."

"A certain percentage of labor troubles has been due to disagreements between unions themselves as to the

classification of work properly belonging to each. Plainly, any such disputes are beyond the decision of company management yet they frequently result in strikes and loss of wages to employees in other departments even though the management is entirely innocent either of provoking the trouble or championing either side after it has arisen. Herein lies one of the advantages of employee representation, in that while it insures representation of all employees by their own associates who understand their local craft problems, it avoids jurisdictional disputes between two crafts in the same organization."

"The primary purpose of representation," Mr. Teagle concludes, "is not to draw up lines of battle but to provide means for peaceful settlement. Most questions have to do with details of company or shop management. The way to settle them is in open conference. When two parties want to reach a satisfactory settlement of an apparent divergence of interests, the sensible thing to do is to get together and consider all the facts before coming to conclusions."



The mammoth supercharger which is a feature of Graham's N. Y. Show exhibit

Social and Economic Understanding Essential to Engineer of the Future

Secretary of Agriculture Wallace believes
technological progress must be motivated
by some conscious social purpose

SO far as science and engineering themselves are concerned, I see no reason why the rate of expansion which characterized the "Century of Progress" should not be increased, at least for a time. While there are certain ultimate limitations in our supplies of coal, iron, petroleum, and soil fertility, it is obvious to most of us who are close to any particular phase of scientific research or technical organization that there are imminent discoveries which, when applied, will increase per capita output enormously. Nearly every technical man knows in his heart that from a purely scientific, engineering point of view the most amazing things could be done within a relatively short period. Of course, in the world of hard fact the full effect of any revolutionary invention is not felt typically for 15 or 20 years. But I feel safe in saying that our scientists and inventors today have enough new stuff within their grasp, or just around the corner, so that the world 30 years hence could easily have a total productive power twice that of today.

It is almost equally possible that the total wealth-producing power of the world a generation hence will be less than it is today. The trouble, if it comes, will not be in the inability of scientists and technologists to understand and to exploit nature, but in the ability of man to understand man and to call out the best that is in him. In solving this limitation the scientists and engineers have all too often been a handicap rather than a help. They have turned loose upon the world new productive power without regard to the social implications. One hundred years ago the power looms of England destroyed the cottage weaving industry, and during the early years of that impact misery strode over the countryside of England in proportion as the nouveaux riches gained capital to exploit their gains over the entire world. That kind of thing has been done again and again, and we have called it progress because the power of man over nature was increasing and because in the long run the common man shared in this increase. What happened to the common man in the



Henry A. Wallace, Secretary of
Agriculture

short run, of course, could be of no concern to a laissez faire society.

I would like to suggest that the very training which made possible the enormous material expansion of the past century may to some extent have made impossible the building of a just social system for the promoter and more uniform distribution of the wealth produced by the system. Most of the scientists and engineers were trained in laissez faire, classical economics, and in natural science based on the doctrine of the struggle for existence. They felt that competition was inherent in the very order of things, that "dog eat dog" was almost a divine command.

Excerpts from speech before the American Association for the Advancement of Science.

It is my observation that previous to 1933 more than three-fourths of the engineers and scientists believed implicitly in the orthodox economic and social point of view. Even today I suspect that more than half of the engineers and scientists feel that the good old days will soon be back when a respectable engineer or scientist can be an orthodox stand-patter without having the slightest qualm of conscience. It is so nice to feel that there are great supermen from whom, directly and indirectly, you draw your own sustenance, who, sitting Jove-like above us lesser mortals, make possible the free functioning of the law of supply and demand in such a way that their profits enlarge at the same rate that our research expands. Like most every one, I rather like that kind of world, because I grew up in it; in some ways, I wish we could get back to it. But both my mind and my instinct tell me that it is impossible for any length of time. Of course, if prosperity returns within the next year or two, it is possible for us to think that we are back in that old world again. But unless the people who make profits and direct capital allocation to different productive enterprises have seen a great light, or unless we move forward into certain highly centralized forms of industrial and governmental control, we shall sink back into our former trouble.

There ought to be more than a little hope, it seems to me, in the fact that our engineers have demonstrated so successfully their skill in planning. In many great industries, the engineers have been able to mark out the contours of expansion and development 10 to 15 years ahead. If in the past they seemed to be guided by purely material and mechanical considerations, that has doubtless been because such considerations were necessarily the chief ones so long as we were conquering a continent. Today it is becoming increasingly evident that we must take into account the qualitative as well as the quantitative expansive aspects. This would suggest that in the engineering courses of the future the engineers should be given an opportunity really to enrich

their minds with imaginative, non-mathematical studies such as philosophy, literature, metaphysics, drama, and poetry.

It is difficult to see how the engineer and the scientist can much longer preserve a complete isolation from the economic and social world about them. A world motivated by economic individualism has repeatedly come to the edge of the abyss, and this last time possibly came within a hair's breadth of plunging over. Yet science, all this time, has been creating another world and another civilization that simply must be motivated by some conscious social purpose, if civilization is to endure. Science and engineering will destroy themselves and the civilization of which they are a part unless there is built up a consciousness which is as real and definite in meeting social problems as the engineer displays when he builds his bridge. The economist and the sociologist have not yet created this definite reality in their approach; can you, trained in engineering and science, help in giving this thought a definite body?

Today when the industrial nations of the world have skimmed most of the cream off the backward nations and the backward classes, and when there are no longer any challenging geographical frontiers to be conquered, it becomes apparent that we must learn to cooperate with each other instead of joining together in the exploitation of someone else. How extraordinary is the patient vigor of thought which enables a group of engineers to blue-print and execute a new design! And how sloppy is our economic blue-printing and execution by comparison!

There is something about engineering which tends to lay emphasis on logical, cold, hard, lifeless facts. Nearly all engineers have suffered the common punishment resulting from the remorseless discipline of higher mathematics, physics, and mechanics. No man has to work as hard in college as the engineer. As a result, the engineer sometimes imputes a value to precise mathematical reasoning which it does not always have. There is such a thing as life, and the mathematics of life is as far beyond the calculus as the calculus is beyond arithmetic.

We can see in Mendelian genetics a complex algebra which has proved to be of some analytical use in determining the mechanism of heredity. Nevertheless, from the standpoint of producing superior plant and animal organisms, the engineering mathematical approach to life has not yet been especially successful. It seems to me that the emphasis of both engineering and science in the future must be shifted more and more toward the sympathetic understanding of the complexities of life, as contrasted with the simple, mathematical, mechanical understanding of material production.

We wish a wider and better con-

trolled use of engineering and science to the end that man may have a much higher percentage of his energy left over to enjoy the things which are non-material and non-economic, and I would include in this not only music, painting, literature, and sport for sport's sake, but I would particularly include the idle curiosity of the scientist himself. Even the most enthusiastic engineers and scientists

should be heartily desirous of bending their talents to serve these higher human ends. If the social will does not recognize these ends, at this particular stage in history, there is grave danger that Spengler may be proved right after all, and a thousand years hence a new civilization will be budding forth after this one has long laid fallow in a relative Middle Ages.

The Line-Up in the Race for Sales

(Four-door sedan prices)

1934	1933
\$ 345 Austin*	\$ 285 Austin*
425 Continental Beacon	395 Continental Beacon
445 Willys 77	445 Willys 77
495 Chevrolet Standard†	455 Chevrolet Standard†
585 Ford Eight, Plymouth Standard	510 Plymouth Standard
	535 Continental Flyer
	555 Terraplane 6
	560 Ford 8
	565 Chevrolet Master
	575 Plymouth DeLuxe
645 Chevrolet Master	615 Rockne
650 Plymouth DeLuxe, Terraplane 6	675 Dodge 6, Terraplane 8
695 LaFayette	695 Pontiac, Studebaker, Dictator
715 Studebaker Dictator Special	735 DeSoto
730 Oldsmobile 6	745 Continental Ace
745 Auburn 6, Graham 6, Studebaker Dictator	765 Hudson 6
785 Hudson 8, Nash 6, Pontiac 8	785 Chrysler 6, Nash 6
795 Hupp 6	795 Graham Std. 6
845 Auburn Custom 6, Reo 6	825 Oldsmobile 6
850 Chrysler 6	845 Auburn Std. 8, Reo 6
895 Hudson 123-in. 8	895 Graham Std. 8, Hupp 6, Studebaker Commander
925 Graham Special 8, Oldsmobile 8	925 Chrysler Royal 8, Oldsmobile 8
945 Studebaker Commander	995 Auburn Custom 8, Hupp 6
995 Auburn 8, DeSoto	
1,015 Graham Standard 8	1,045 Buick 50, Hudson 8
1,065 Nash Advanced 8	1,065 Nash Advanced 8
1,095 Hupp 121-in. 6	1,095 Studebaker President
1,125 Auburn Custom 8, Buick 50	1,145 Dodge 8
1,145 Studebaker President	1,195 Hupp 8
1,245 Auburn 12, Chrysler 8, Hupp 8	1,295 Chrysler Imperial
1,295 Graham Custom 8	
1,345 Buick 60	1,310 Buick 60
1,395 Auburn Custom 12	1,350 Hudson Major 8
1,435 Franklin Olympic	1,435 Franklin Olympic
1,495 Chrysler Imperial 8	1,445 Hupp 8
1,575 Nash Ambassador	1,570 Buick 80
1,595 LaSalle	1,575 Nash Ambassador 8
1,745 Reo Royale	1,745 Reo Royale
1,845 Buick 90	1,805 Buick 90
2,185 Franklin Airman	2,185 Franklin Airman
2,350 Packard 8	2,245 LaSalle
2,495 Cadillac 128-in. 8	2,350 Packard 8
2,695 Cadillac 136-in. 8	2,575 Pierce-Arrow 8
2,885 Franklin 12	2,885 Franklin 16
2,895 Pierce-Arrow 8	2,895 Cadillac 8
2,950 Packard Super 8	2,950 Packard Super 8
	2,975 Pierce-Arrow 12
	2,995 Chrysler Imperial Custom 8
3,295 Cadillac 146-in. 8	3,200 Lincoln 12
3,400 Lincoln	3,595 Cadillac 12
3,820 Packard 12	3,785 Pierce-Arrow Custom 12
3,995 Cadillac 12, Pierce-Arrow 12	3,820 Packard 12
	4,500 Lincoln 12
6,650 Cadillac 16	6,250 Cadillac 16
*Coupe	†Coach

Montgomery Stern Drive Adapts Automobile Engines for Boat Use

EFFORTS to render practical the use of low-cost automobile engines in motor boats and to reduce the cost of their installation have resulted in the design of the Montgomery stern drive, a vertical section of which is shown herewith. As shown in the illustration, this drive comprises three shafts, two horizontal and one vertical, with spiral bevel-gear drive between them. The drive constitutes a reduction as well as a reverse gear and combines certain other features, including a vacuum clutch throw-out and a neat hydraulic gear-shifting device.

With this drive the engine may be mounted quite high on a horizontal bed and directly in the stern of the boat, separated from the remainder of the hull by a fireproof bulkhead, where its noise, odor and heat do not interfere with comfort. In the case of a cruiser the lines of the craft may be made lower and still ample headroom be provided, as the floor can be placed as low in the hull as desired, there being no propeller shaft to interfere.

In the case of a Ford eight-cylinder engine, for which the drive is well adapted, and which without clutch retails for about \$160, the only important changes required are jacketing of the exhaust manifolds and provision of a positive pump with drive, which need not occasion any greater expense than \$30, it is claimed. For a complete power unit there must be added a clutch and its control, and the reduction and reversing gear with its control. Prices on the latter have not been set as yet.

With this form of drive, the engine can be mounted as high as desired, to give clearance under a standard crankcase, and standard rubber supports, as used on automobiles, can be employed. Drive from the engine is through a clutch and universal coupling to the upper shaft of the unit, which is mounted in five ball bearings. This shaft has splined to it at its center a dog clutch with synchronizing device which can be shifted in the fore and aft direction by means of a hydraulic device. Shifting forward results in forward motion, and vice versa. A two-to-one reduction is effected by the upper set of bevel gears, while the lower set is a one-to-one. Ball bearings are used for all shaft mountings, and both shafts and gears are of heat-treated alloy steel.

To prevent leakage of water into the housing, the form of packing shown,

which includes a Bakelite washer turning with the shaft, and a thrust spring, is employed. The design represented by the drawing includes a tractor propeller and a rudder with hydraulic control.

As will be seen from the drawing, the propeller shaft passes through the stern of the boat well above the water line, so that no stuffing box is required. The unit is merely bolted to the stern at the desired height for the engine and propeller. This offers the advantage of an inboard installation of a conventional automobile engine with an outboard drive. The latter, being completely enclosed in a water-tight housing, can be well lubricated and the lubricant will be kept cool by the water passing by the housing. Aft of the propeller the case is properly streamlined to cut down the resistance.

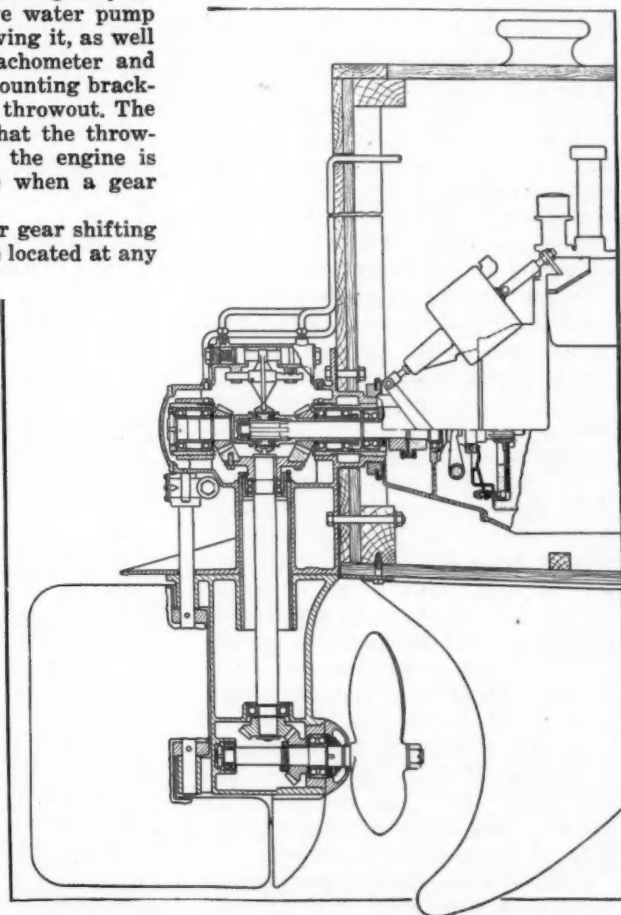
Installations can be made with a simple adapter housing for the clutch, arranged to bolt to a standard S. A. E. bell housing. Such a housing may be provided with a positive water pump and with means for driving it, as well as with drives for a tachometer and generator, and with a mounting bracket for a vacuum clutch throwout. The latter is arranged so that the throwout is automatic when the engine is throttled, as it will be when a gear shift is required.

Hydraulic controls for gear shifting and for steering may be located at any

desired position in the boat and connected by copper tubing to the units in the drive assembly. The shifter comprises a double-ended piston moving in cylinders connected to similar elements in the control unit. Steering is done with a wheel which turns a pinion engaging with a rack, at each end of which there are pistons in oil-tight cylinders connected by piping to similar elements for actuating the rudder. The only other control element required is a Bowden wire for operating the throttle, as the clutch is disengaged automatically when the throttle is closed.

This entire design is the work of Donald H. Montgomery, vice-president in charge of Engineering, The New Britain-Gridley Machine Company, and the designs are being developed for the market by Montgomery & Fleming, consulting engineers, New Britain, Conn.

Sectional view of
Montgomery
stern drive



The Forum

Do Drivers Want Automatic Transmissions That Do Their Thinking for Them?

Editor AUTOMOTIVE INDUSTRIES:

J. Bazzeghin, in *Automotive Industries* for Dec. 2, sums up in rather complete fashion a number of methods for automatic transmission operation, with mention of the more obvious disadvantages inherent to each and then with a magnificent disregard for logic proceeds to new and dizzier complications of his own.

He, with most other commentators whom I have read, takes the premise that the automatic transmission must be automatic in the fullest sense, that is, capable of selecting and engaging the most suitable new gear ratio for any substantial change in the demand for power at the rear wheels.

This premise has the great weakness of neglecting the most important factor in the operation of the car, the driver. If he is to be relegated to steering and braking while a piece of mechanism "woodenly" changes its mind about the velocity ratio between engine and rear wheels according to road surface conditions, he will probably feel that he could have more fun riding a bicycle; that driver's only objection to a conventional transmission is the requirement for considerable skill in juggling new ratios into mesh without causing the adjacent taxidriver to enquire if "he is trying to sharpen them up."

On the other hand, he loves the rush of a good getaway when the light goes green and is quite willing to stay in the lower gears sufficiently long for each one to give him its best. How happy he would be if only it were to be accomplished merely by stepping on the gas for each swoop and letting it up for each shift. That unfulfilled wish is the key to the analysis of relationship between the numerous psychological and mechanical factors which must be reconciled in arriving at a really satisfactory design of automatic transmissions.

One of the primary mechanical factors is simplicity, and another

is moderation in size. These two commonly go together. They are not so important at present, with the transmission in the middle of the car and relatively uncrowded, but when rear engines arrive, not only is the need for an automatic transmission imperative, but there is less room available for it than any one imagines who hasn't tried it. The space limitations must be already discouraging for many designs with their multiplication of gears and clutches, to say nothing of what it would mean to find room for some of the proposed "improvements" in the way of clutch brakes and vacuum cylinders.

Let us revert to the driver and his mental attitude toward the ability of the car. In starting the car from a standstill, he may want to accelerate as furiously as engine combination permits, or he may be in a loafing mood, wanting only to get the car rolling and then to mooch along at 15. In the first case, he wants rear wheel torque and plenty of it. He wouldn't know a flat torque curve from a stenographer's pot-hook, but he can feel the falling off when he has gotten about all there is to be had in low gear. Then he wants more torque. He knows that he can get it in second, and he wants to get into second quickly. The quickest natural action is to let up on the accelerator and then step on it again. This simple cycle of motion of one foot should suffice, the letting up not only causing a shift from low to neutral, but also determining whether the next gear shall be second, or, if the hurry is over, a higher gear, such as third or fourth. Five speeds forward is not too many if you really want car performance under all possible conditions.

The loafing driver wants to get into an upper gear suitable to his car speed at once, so that he can roll along with the engine barely purring. But if he suddenly decides to go to town, it shouldn't be necessary to do more than step on

the gas to get an instant shift to a lower gear in keeping with his demand.

Driver demand, not engine torque, not engine speed nor car speed, and above all not the torque demand so naturally associated with a hill or a soft road, should function at all times to indicate to the automatic transmission what ratio is best suited to the circumstances when a shift is about to be made, and then at which moment it shall be made.

This includes such circumstances as a driver approaching a hill with insufficient engine speed to furnish power to climb the hill. If he deliberately holds her wide open in high gear while steadily losing speed, he deserves no better than to stall, and no designer should contemplate for a minute devising a mechanism to outwit such driving. If he did he would only defeat his major purpose, which is to give the driver full and complete control of his car at all times.

Not only complete control of the car but full responsibility for selecting the movement of shifting into a new gear must remain with the driver, for one is the reward of the other when he has properly gaged his driving conditions and altered his demand on the engine in a way to best accommodate any substantial change in those conditions. It would probably be worthwhile to entrust him with the selection of the new ratio itself by delicate manipulations of the accelerator pedal, in addition to choosing the moment for the shift. Such ability would be appreciated by many a driver and would not be altogether lost on even the most heavy-footed.

As for the transmission construction itself, there need be no great departure from our conventional sliding gears. They are no less brutal than their inventor confessed, but neither are they less practical after all these years. They still combine simplicity, compactness and durability in a manner difficult to equal with other devices, especially where four or five speeds are required. It remains then only to devise additional mechanism whose purpose is to act as

a substitute for the muscular coordination so highly developed in a good driver in selecting and shifting those sliding gears.

More than enough ingenuity requisite for this achievement has already been expended on the various automatic transmissions described in publications, without making them either as simple or complete in their functioning as they must be to survive. It would seem only logical, then, to concentrate ingenuity on the necessary

addition to a time-tested major unit rather than diffuse ingenuity over the mass of detail incidental to designing a complete new unit which is intended to improve on the overall performance and economic value of the conventional transmission.

The desired result can and will be attained with mechanism which will be much simpler, longer-lived, and cheaper to make than any which has been made generally known thus far. FRED C. BOOTH

Twenty-One Features a Satisfactory Automatic Transmission Should Have

I read with interest Mr. Heldt's articles on the Automatic Transmissions, also Mr. Bazzeghin's comments. I agree with Mr. Bazzeghin that there appear to be certain advantages in using a gear-shifting transmission with a power-operated clutch. There are at least two important reasons in its favor: The highly perfected and standardized development of the design and manufacture of sliding gears, and the possibility to go back to the manual shift when desired or necessary. I also believe that the best results can be obtained with the direct control of the gear shift by the speed of the automobile, together with an indirect control by the torque through the operation of the accelerator. Such a system, in order fully to meet the requirements of all possible driving conditions, must possess the following characteristics:

1. The speed control device (such as a centrifugal governor operated by the transmission or driven shaft) must at certain definite speeds connect the first, second or third (or fourth) gears with the shifting mechanism.

2. The shifting mechanism must be power-operated (for instance, by a vacuum cylinder).

3. The speed control device must operate quickly at the shifting speeds, without exerting any pull on the gears at intermediate speeds.

4. The clutch must be automatically disengaged when the engine speed falls below a certain safe limit.

5. With the automobile standing still, the gears must be connected for the first speed, with the clutch disengaged. The transmission must be automatically shifted into the low gear whenever the automobile is stopped.

6. Manual gear shift must be provided on the dashboard for the reverse.

7. The automatic gear shift must be automatically disconnected or rendered inoperative when the reverse manual shift is used.

8. The clutch pedal must be used only for starting the engine (when the vacuum clutch release is inoperative) or when the automatic gear shift is disconnected for manual operation.

9. The engine must become engaged with the transmission as soon as the accelerator pedal is depressed, thereby starting the car in low gear.

10. The clutch must remain engaged as long as the accelerator pedal is depressed. At certain speeds the speed governor must select the second and third speeds.

11. As soon as the speed selection is made the clutch must be automatically disengaged.

12. As soon as the clutch is disengaged the vacuum cylinder (or

other power device) specially provided for shifting the gears must become operative, thereby shifting the gears for the second (or third) speed.

13. As soon as the gear-shifting operation is completed the clutch must be again automatically engaged.

14. It is desirable to so arrange matters that all gear shifts be made with the movement of the vacuum piston in one direction (for instance, to the right), the opposite movement being used to disengage the gears only.

15. In driving in any gear the clutch remains engaged only when the accelerator pedal is depressed. Release of this pedal releases the clutch, thereby causing the car to coast as if provided with a free-wheeling clutch.

16. Application of brakes must engage the clutch, regardless of the accelerator pedal, in order that the engine may be used as a brake.

17. In coasting down hill on brakes no gear shifting should take place until the car slows down to a limiting low speed, when the low gear must be connected directly from the third. Then the clutch must be disengaged.

18. For changing to second gear when coasting on brakes the accelerator must be used for a short time, sufficiently long to complete the shift. Coasting then may be continued on second gear.

19. A manual control must be provided for changing the gear-shifting speeds within certain limits.

20. It is desirable to have an arrangement for raising the engine speed when the brake is applied in order to adjust the engine speed to the speed of the transmission shaft.

21. Provision must be made for a quick change from an automatic gear shift to an ordinary lever-operated shift, and vice versa.

I believe that the above features are essential to satisfactory operation of an automatic transmission under all conditions. They are not impossible or impracticable. In fact, such a system has been devised by one of my clients.

JOHN P. NIKONOW

Delivered Price Must Cover All Factory & Other Charges, Dealer Authority Rules

Fleet Owners Must Buy \$15,000 Annually to Qualify for Quantity Discount with Dealer Contribution to Discount Limited to 3 Per Cent—Ruling on "Bird Dogs"

NEW YORK — Rulings defining what dealers may include in delivered prices, and establishing a basis for recognizing fleet buyers, were issued late last week by the Code Authority of the Motor Vehicle Retail Trade. The ruling on fleet discounts differs only in detail from the proposal outlined in *Automotive Industries* of Dec. 30, 1933, page 798.

On delivered prices, the Code Authority ruling said, "In determining delivered prices under Section B, Marketing Rules, all charges made by the factory to dealers must be included plus any additional charges which can be substantiated that are not enumerated in Section B, Motor Vehicle Retailing Code, even if the amount of such charges is greater than suggested by the factory. Dealers handling the same make of car must arrive at a fair average charge and make the same uniform in each district. Any deviations from prices so established constitutes violating the code."

The ruling on fleet discounts follows:

"In order to facilitate the handling of quantity business and to enable dealers to make deliveries of cars to such purchasers the following procedure has been approved;

"All sales are to be made by and through dealers at regular delivered prices and dealers may handle any used car that may be involved at the regular official book price.

"On such deliveries made to quantity purchasers it is understood that upon such cars delivered the factories by contractual arrangement with the dealers will bill such cars to the dealers at three per cent less than the regular discount.

"If delivery is made from dealer's own stock it shall be reported and the factory may change its billing price on such car to conform to the above.

"If it develops that the purchaser does not qualify as a quantity purchaser the regular discount will be restored by the factories to the dealers who made deliveries to such purchaser.

"Quantity purchaser is one who establishes the fact that his total purchases of new cars in any current and consecutive 12 months' period have reached a volume of \$15,000 exclusive of transportation, delivery and handling charges, tax or price of equipment, bodies and accessories not included in standard factory specifications.

"It is understood that only company owned or company controlled cars are

to be considered in the total determining a quantity purchaser."

This ruling obviously places on the quantity buyer the burden of proving that his annual purchases of new motor vehicles reach or exceed the \$15,000 mark. The manufacturer, of course, not being subject to the dealer code, can make such additional concessions to the fleet buyer as he desires. The ruling simply limits the dealer's contribution to three per cent of the list price. Trucks rated at more than $\frac{3}{4}$ ton are not affected since they are not subject to the marketing rules of the dealer code.

Although no official ruling has been released, it is understood that the paying of commissions to owners, friends, garages, etc., commonly known as "bird dogs," for turning over the names of prospects who subsequently buy cars, will be interpreted as a gratuity and hence unfair competition. The reasoning back of this expected interpretation is that it is impossible to determine when such a commission is a gratuity, a price-cut or a rebate, and hence for administrative reasons, it must be ruled out.

Compliance Board to Hear Budd Labor Case

January 24 Is Selected as Date—Senator Wagner Charges Violation of 7A

WASHINGTON — The National Compliance Board of NRA has set Jan. 24 as the date for hearing of the complaint lodged against the E. G. Budd Mfg. Co. by the National Labor Board, in which it charged the company with violation of the automobile code. It is understood that the Compliance Board has agreed to provide the Budd company with a brief stating in what particulars it is alleged that it has violated the code. The company's attorneys, it is reported, will then prepare and submit an answer.

National Compliance Director William H. Davis will conduct the hearing and Milton Handler, general counsel for the National Labor Board which referred the case to the Compliance Board, will participate.

Senator Wagner of the Labor Board turned the case over to the Compliance Board on Jan. 11, stating that in the opinion of the Labor Board

(Turn to page 88, please)

NEW

Rayburn Proposes Bus-Truck Regulatory Bill

Would Subject Motor Carriers to Railroad Regulation by I.C.C.

WASHINGTON—A bill giving the Interstate Commerce Commission comprehensive regulatory powers over interstate common and contract motor carriers of passengers and freight has been introduced into the House of Representatives by Chairman Rayburn of the Committee on Interstate and Foreign Commerce. The bill provides for much the same type of regulation now applied to railroads and is patterned after H.R. 10288 which passed the House in the 71st Congress.

Hearing on the bill started on Jan. 17, with Frank McManamy, member of the Interstate Commerce Commission, and Kit F. Clardy, chairman of both the Michigan Public Service Commission and of the legislative committee of the National Association of Utilities and Railroad Commissioners, appearing to support it. It is the committee's hope that the hearing will be concluded this month. Representatives of the American Trucking Associations, Inc., will be heard during the week of Jan. 21.

What the administration position on the bill is has not been revealed, although it seems to be somewhat along ideas sketched by the President in his campaign speeches. A question of policy is involved as the bus industry is already attempting self regulation under an NRA code and one to control trucking awaits final action. Vesting regulatory power over motor carriers in the I.C.C. would, of course, remove from the NRA picture. The President has asked Federal Coordinator of Transportation Eastman, who has been making extensive studies in the transportation field, to confer with him on the bill, but the Coordinator has asked for more time to prepare his data.

The bill would give the I.C.C. supervision and regulation of rates, ac-

(Turn to page 84, please)

NEWS

Expanding Operations May Put January Production 25 Per Cent Over Last Year

Increase in Code Working Hours and Continuance of Merit Clause Stimulate Optimism Created by Rapid Increases in Output Rate—Labor Shortages Develop

by Athel F. Denham

Detroit Editor, Automotive Industries

January production of new vehicles according to present indications will exceed last January by approximately twenty-five per cent. Present production estimates call for a total of roughly 165,000 to 170,000 cars and trucks as compared with 133,400 last January.

The estimates are based, of course, on the assumption that factories will be able to step up production from now on in conformity with expectations. So far passenger car production by the major producers has climbed at a satisfactory rate, considering the late start.

Production optimism has been further increased in the automotive industry following two major events

in Washington, the extension of the N.A.C.C. code retaining the merit clause and the increase in maximum working hours to forty in the same code. These two events are credited with having taken much of the wind out of the sails of labor agitation in the industry.

The increased number of hours permitted have also been hailed for another reason by production men. Already shortages of certain types of labor have developed in the industry, particularly welders. Some of this labor has been drawn from the industry by CWA projects and a number of companies are having difficulties in training new men to fill their places.

N.Y. Show Attendance 63% Bigger Than '33

Total Exceeded Only by 1927 and 1928 Records

NEW YORK—Paid attendance at the New York Show last week was 63 per cent above last year and was exceeded in the 34 years of the history of the Show only by the record years of 1927 and 1928, according to Alfred Reeves, manager of the exhibition.

Day-by-day increases over last year were: Saturday (Jan. 6) 112 per cent; Monday, 93 per cent; Tuesday, 55 per cent; Wednesday, 56 per cent; Thursday, 56 per cent; Friday, 52 per cent; Saturday, 49 per cent.

Commenting on last week's Show, Mr. Reeves declared:

"The record crowds at this Show indicate, first, that the great motor-ing public still wants new and better motor vehicles that furnish efficient transportation for people and merchandise.

"Second, that the visitors favor the type of action Show offered this year with the ingenious devices and models demonstrating what takes place under the bonnet and under the chassis.

"Third, that the people have money with which to buy when real value is offered for the dollar and certainly motor car values this year are exceptional.

"Fourth, that the motor manufacturers merit the letter sent by President Roosevelt in which he expressed appreciation of the contribution made by these leaders, a contribution that he said 'was made in spite of handicaps which might have proved crushing to men of less dauntless spirit than the executives of the automotive industry.'

"Fifth, that the Show and the offerings with their radical changes in design and many important improvements, representing tremendous outlays for new tools, dies and manufacturing equipment is proof of the confidence of automotive leaders that the step-up of 43 per cent in production in 1933 will be followed by a further expansion in production this year.

"Last and not, by any means, least, are the indications of a new spirit among the motor industry leaders generally, that as in 1921 and in 1913, the motor industry may be the one to take the first important forward steps that will add speed to the many new moves toward better business."

K. & M. in Merger

AMBLER, PA.—The Ambler Asbestos Shingle and Sheathing Co. has been merged with the Keasbey & Mattison Co., also of this city, and the enlarged organization will retain the name of the latter company. Acquisition of a controlling interest in Keasbey & Mattison by Turner and Newall, Ltd., Great Britain, also has been announced by A. S. Blagden, president of the American organization.

Loewy and Hupp Engineers Design New "Aero" Bodies

In our issue of Jan. 6, we credited Amos Northrup with the design of the "Aerodynamic" bodies on the Hupmobile 421J and 427 series. This was incorrect as we are informed that these bodies were designed by Raymond Loewy of the Murray Corporation of America working in cooperation with Hupmobile engineers. Bodies on the 417 series are the result of the combined efforts of Hupp designers and the Murray design staff headed by Amos Northrup.

S.A.E. Council Hits Electioneering

NEW YORK—Electioneering by a member to promote his own candidacy for an S. A. E. office, was strongly disapproved in a resolution adopted by the Council at its meeting on Jan. 7. The resolution follows:

Whereas the Society of Automotive Engineers has from its beginning prospered and operated harmoniously on the principle that the office should seek the man, rather than the man seek the office, and that neither nominations nor elections should ever be influenced by commercial pressure, and

Whereas this is the accepted practice in all professional societies of real standing, therefore

Be it resolved that this Council strongly disapproves of a member's campaigning or promoting his own candidacy for an office in this Society, and further disapproves of any campaigning or political activity not in accordance with the spirit of the above principle.

Supercharger Will Be Furnished on Graham 6

PHILADELPHIA—The centrifugal supercharger, offered originally only on the Graham custom eight, will also be furnished on the company's six-cylinder models, J. B. Graham, president, Graham-Paige Motors Corp., announced at a dealer luncheon held here on Jan. 16. The effect of the supercharger will be to step up the power output of the six from 88 to 125 hp., Mr. Graham said.

55,000 Fords in January

DETROIT—The Ford January production schedule, originally fixed at 46,000 units, has been stepped up several different times in the past few weeks and now stands at 55,000 units for the month.

ACCA Names 2 Groups to Study Flivver Planes

Organization of Corporation for Production of Ships Is Being Considered by Industry

NEW YORK—The airplane manufacturers of the United States through their trade association, the Aeronautical Chamber of Commerce of America, Inc., on Jan. 13 prepared to cooperate actively with the Government in its effort to produce the so-called "flivver" airplane. The Chamber announced the appointment of two committees of manufacturers to work out preliminary details of a plan whereby the industry and the Government may work together to develop a low-priced, quantity production plane with the assistance of public works funds as proposed by Eugene L. Vidal, Director of Aeronautics in the Department of Commerce.

The first committee will cooperate with the Government in working out the technical details and complete performance specifications of the new airplane and its engine. Members of that committee include: Chairman, R. S. Damon, president of the Curtiss-Wright Airplane Company; C. J. Brukner, president of the Waco Aircraft Company; B. D. DeWeese, general manager of the Stinson Aircraft Corporation; R. H. Fleet, president of the Consolidated Aircraft Corporation, and C. G. Taylor, president of the Taylor Aircraft Company.

The second committee will cooperate with the Government in determining the legal and economic practicability of organizing a corporation within the industry to undertake development and production of the plane. Members of that committee include: Chairman, S. M. Fairchild, president of the Fairchild Aviation Corporation; E. R. Breech, president of North American Aviation, Inc.; P. G. Johnson, president of the United Aircraft and Transport Corporation; T. A. Morgan, president of the Curtiss-Wright Corporation, and Taylor Stanley, president of the Aeronautical Corporation of America.

Roper Starts Campaign For Uniform Road Rules

WASHINGTON—United action on a nation-wide scale to reduce loss of life, injuries and property damage in street and highway accidents is projected in plans announced today by the Secretary of Commerce. Action will be directed on two main lines: (1) adoption of uniform motor laws and operating rules and (2) a concerted drive to secure and enforce widespread popular understanding of safety essentials in the use of streets and highways.

To lay the ground work for the campaign, two committees of traffic

officials, experts and representatives of organizations interested in traffic safety are meeting in the Department of Commerce and also in the Chamber of Commerce of the United States this week, while a third committee has been engaged in research for several months dealing with standardization of traffic signs and signals. The results, when formulated, will be submitted to a general meeting of the National Conference on Street and Highway Safety planned for the late spring.

Tire Makers Name Code Authority Members

WASHINGTON—Organization of the Rubber Tire Manufacturing Code Authority was completed last week in New York at a meeting of representatives of the industry with Col. Robert W. Lea, Assistant Administrator for Industry and Deputy Administrator A. L. Dress, the Administration members of the Authority. At the meeting it was reported that 35 of the 40 tire manufacturing companies in the industry have signified their assent to the code as approved by President Roosevelt on Dec. 21. The 35 companies represent approximately 99 per cent of the industry in volume.

The industry members of the Code Authority and their alternates are as follows:

Principal	Alternate
Charles Borland, Mohawk Rubber Co.	J. A. MacMillan, Dayton Rubber Mfg. Co.
F. B. Davis, U. S. Rubber Co.	E. D. Levy, Fisk Rubber Corporation
Irving Eisbrouh, McClaren Rubber Co.	Carl Pharis, Pharis Tire and Rubber Co.
H. S. Firestone, Firestone Tire and Rubber Co.	James Walsh, Armstrong Rubber Co.
P. W. Litchfield, Good-year Tire and Rubber Co.	W. O. Rutherford, Pennsylvania Rubber Co.
William O'Neil, General Tire and Rubber Co.	A. A. Garthwaite, Lee Tire and Rubber Co.
F. A. Seiberling, Seiberling Rubber Co.	J. W. Whitehead, Norwalk Tire and Rubber Co.
J. D. Tew, B. F. Goodrich Co.	C. C. Gates, Gates Rubber Co.

New Haven to Have Streamlined Train

NEW YORK—A streamlined train which will make the 44-mile run from Boston to Providence, including the Back Bay stop, in 40 to 44 minutes, will be part of a new equipment program announced by the New York, New Haven & Hartford. The new train, it is said, will do 110 m.p.h.

B. & D. Improves Position

TOWSON, MD.—Black & Decker Mfg. Co. reports net loss of \$683,611 for the fiscal year ending Sept. 30, 1933, against loss of \$798,312 in the preceding year. The operating loss before write-downs and depreciation was \$215,430, all of which was incurred prior to May of last year, the company having turned the corner in that month.

Works Councils Gain 180% Since Last June

Trade-Union Agreements Increase Only 75% After Passage of Recovery Act

NEW YORK—Since the enactment of the National Industrial Recovery Act, the number of companies that deal with their workers through employee-representation plans has increased 180 per cent, and the number of companies that have trade-union agreements with their employees has increased 75 per cent, according to the results of a nation-wide survey of employer-employee relations in manufacturing and mining industries conducted by the National Industrial Conference Board.

Reports received from 3314 concerns employing 2,585,740 wage-earners, or 27 per cent of all employed in manufacturing and mining industries, showed that 2284 companies, employing 1,013,016 workers, dealt individually with their employees; 653 companies, employing 1,164,294 workers, had some form of employee representation; and 416 companies, employing 240,866 workers, had trade-union agreements. A few companies combined individual and collective dealing.

By size of company, the returns showed that individual bargaining was practiced generally in the smaller companies, averaging less than 500 employees each; trade-union agreements were more common in the medium-size companies, averaging about 800 employees, and employee-representation plans were used generally in the larger companies, averaging over 1500 employees.

Employee-representation plans predominated in metal mining, metal working, rubber products, and petroleum refining, while trade-union agreements were most prevalent in clothing, printing and publishing, stone, clay and glass, textiles, and coal mining.

Of 652 employee-representation plans reported, 54.1 per cent were of the employee-committee type, in which the employee representatives meet by themselves and confer with the management only when some matter is to be negotiated; 34.2 per cent were of the joint-committee type, in which the employee representatives meet with the management representatives, the two groups usually being equal numerically; and 9.7 per cent were a combination of these types, the employee representatives meeting sometimes by themselves and sometimes with the management representatives. Only three companies, employing less than 2000 workers, reported using the so-called Industrial Democracy plan, a type modeled on the Federal political system, with a cabinet, senate, and house of representatives.

Shorter Work Week Threatens Industry as Labor Drives for 30 Hour Maximum

by L. W. Moffett

Washington Editor, Automotive Industries

WASHINGTON—With a reduction of working hours and a possible increase in wages scheduled as the next major move of the NRA, industry is looking with concern to the meeting of code authorities to be held here on Feb. 15.

The announced purpose of General Hugh S. Johnson, National Recovery Administrator, in bringing these authorities, representatives of all industries, together is, on the one hand, to consider cutting down the 40-hr. week and to correlate the activities of the authorities and on the other, to initiate an effort for the simplification of codes. It means, apparently, that there is to be a turning back to the original aim of the Recovery Act, the activities growing out of which have branched out into ramifications that were not contemplated. Codes have taken on complications that it is now seen must be smoothed out. Definitions of unfair trade practices which are embodied in codes, spread over such a vast range that control has become extremely difficult. Many codes are loaded down with these complications. Perhaps the only major code entirely free of them is that of the automobile manufacturing industry. It should not, therefore, prove a problem in adjustment to fit it into any simplification or correlation plan that may be worked out, if any can be worked out. General Johnson has referred to this newest move as a "mopping up process."

The automobile industry, however, after just having had the 40-hr. week granted to it by order of General Johnson himself, will face the possibility of having it taken from it soon. It may be, of course, that the application of the downward revision of hours, if it is to be adopted will be withheld for sometime, giving a better chance for readjustment to the new order of things. But if organized labor has its way it will not be held up for long.

Organized labor is insisting on the 30-hr. week, knowing perhaps that its

adoption is hardly a possibility; certainly not a probability in the near future. General Johnson has said that the 30-hr. week would bankrupt industry. He has not said what work period he favors, if he has any definite number of hours in mind. There has been talk of 32 hr., or three hours less than the work-week specified in the automobile manufacturing industry code before it was extended to 40 hr. But General Johnson has gone along with organized labor in the view that hours must be shortened if unemployment is to be effectively reduced. He has not gone to the extremes of organized labor and it is reported that President Roosevelt, at White House conferences with Congressional labor leaders, has shared the views of General Johnson, favoring a comparatively early cut in the work hours, but not down to 30.

To add to all this we have a report to the effect that the NRA favors boosting wages. There is an indication, however, that it realizes that the margin of profit on which industry is running is narrow where it exists at all, and is not proposing a lift in wages until industry is in a stronger financial position.

Speaking of the reduction in hours, General Johnson said:

"I think that eventually this whole country has got to go to the shorter week. We have exhausted possibilities statistically—on the codes of the various industries—and it is a very tight question. There are a lot of these companies which have exhausted their capital and reserves and can't borrow money. You have to consider the condition of industry or you will get kick backs and all that sort of thing, that would practically nullify all of your efforts. It is distinctly not a simple question."

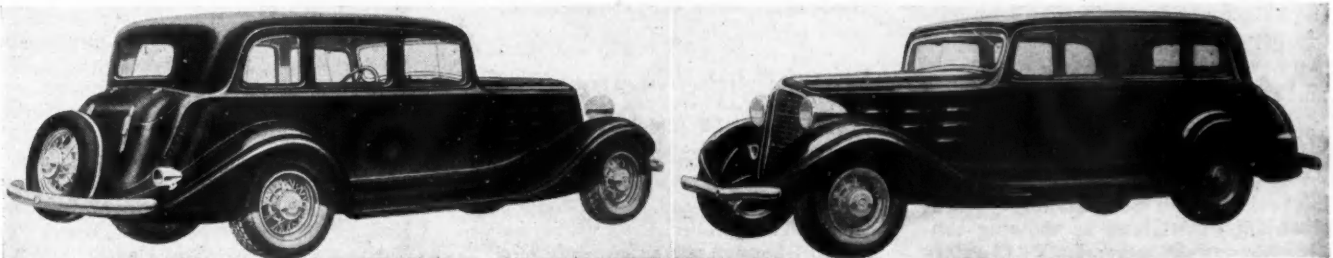
It has been suggested that if it is necessary to have working shifts in multiples of 8 hr., as General Johnson has intimated, it will mean a 32-hr. week. But it is the understanding that this might be an average week of

32 hr. and that longer periods could be worked to cover peak demand.

The 32-hr. week seems to be fixed in the minds of many. This has been made clear, for example, by the statement of Senator Robert F. Wagner, chairman of the National Labor Board, who has declared that a reduction to 32 hr. by the NRA would prevent any legislation at the present session of Congress. Special significance is given to this statement inasmuch as Chairman Connery of the House Committee on Labor is again pressing for the enactment of his 30-hr. week with strong support from organized labor. It is apparent that the avoidance of such legislation at this time is desired by the administration and that it is seeking a compromise, or an ostensible compromise, through the initiative of the NRA rather than through legislative action. There is a belief that some leaders of organized labor do not expect legislation for the 30-hr. work-week and realize that its adoption would prove a greater strain than industry could bear and instead of being an aid to labor, it would be the reverse because it would increase unemployment.

Senator Wagner has praised the suggested 32-hr. work-week as a move in the right direction, adding that the 30-hr. week will automatically follow. He does not say how soon it may follow. Chairman Connery has said he can't accept a compromise and that the 30-hr. week must be adopted at once. Mr. Connery has said as much before.

The entire labor situation from the view-point of the American Federation of Labor will be aired when its leaders assemble here on Jan. 24, to hear President William Green make a report on the NRA. The Federation probably will find reason to praise the NRA. It will also probably take a few slaps at the NRA. For one thing those who have not "gone along" with organized labor will be taken sharply to task and perhaps part of the blame will be placed at the door of the National Labor Board on the ground that it has not been firm enough in driving through its orders to industry. Particularly are those who have challenged the jurisdiction of the Board likely to be the object of organized labor's wrath.



Two views of the new Reo Flying Cloud which will be introduced in the near future. A patented ventilation system is said to be one of its features

The indications are that organized labor will resume its demand for greater recognition by the NRA, especially in the way of more Deputy Administrators either directly from the organized labor's ranks or fully sharing its doctrine. It is probable, too, that organized labor will again ask for representation on code authorities. Some of its representatives opposed the idea at first. President Green was one of them. Some still oppose the idea. General Johnson has turned thumbs down on the plan for the present at least and has suggested that labor settle its own differences on the point before he proceeds further.

Meanwhile the NRA has shifted its labor policy. This is seen in the action of the National Labor Board in handing over to National Compliance Director W. H. Davis the case of the E. G. Budd Mfg. Co., Philadelphia, builders of automobile bodies. In announcing the transfer of this case to the National Compliance Board, Chairman Wagner of the Labor Board said that Director Davis is taking immediate steps to hold a hearing.

The case largely parallels that of the Weirton Steel Company which has been placed in the hands of the Department of Justice by the National Labor Board the latter seeking to bring injunction proceedings which would set aside the results of the election held under the company's employee representation plan. The Board wants to conduct an election held under its own jurisdiction.

The distinction made between the Budd and Weir cases is that the Budd Company did not and the Weirton Steel Co. did sign an agreement with the Labor Board providing for an election under the supervision of the Board. President Weir, however,

proceeded with the company's own election after charging that the agreement had been altered. So the Weir case remains a Labor Board affair on the ground that an effort is being made to settle a labor dispute. The Budd case becomes a National Compliance Board affair on the NRA charge that the Budd Company has violated the automobile manufacturing code. The Compliance Board has to do with code violations.

The claim is made by the NRA and is vigorously denied by the Budd Company that the latter has violated Section 7-a (collective bargaining) of the Recovery Act, a section that is incorporated in all codes. In the Weir case there is no charge that it has violated the steel code. Rather, it is held, the steel company has violated an agreement made with the National Labor Board. A distinction without a difference is seen by some. Others, and perhaps the majority of those who have followed the cases, see a tacit admission on the part of the National Labor Board that it has serious doubts as to its authority to enforce elections under its supervision. Hence, it is explained, a shift has been made in the Budd case to see what authority the Compliance Board may have over alleged code violations.

The cases in any event promise to set highly important precedents bearing upon the powers of NRA in labor cases and in cases of alleged violations of codes. It would not be surprising to many to see the Budd case brought to a head sooner than the Weir case. It has been observed that the NRA and Department of Justice have moved very slowly in the Weir case, doing nothing more up to the present than making "investigations," and holding conferences with the Department of Justice.

Rayburn Bus-Truck Bill

(Continued from page 80)

counts, services, records, reports, qualifications of employees and maximum hours, and safety.

Common carriers in operation Jan. 1, 1933, would receive certificates under a "grandfather" clause, but all others including new proposed operations, would be required to show convenience and necessity which the bill does not define. Consequently what the I.C.C. might consider in determining convenience and necessity is left wide open. Contract carriers would be required to secure permits. They are not required to show convenience and necessity, but they may be required to show that their operations are not inconsistent with the public interest, which conceivably might mean the same thing as showing convenience and necessity. Carriers would be required to guarantee their financial responsibility.

Power to set maximum and mini-

mum rates for common carriers is vested in the I.C.C. In the case of contract carriers, they would be required to file minimum rates and would be forbidden to go below them. Moreover, the I.C.C. would be empowered to raise the minimums.

Administration in the case of operations in not more than three states would be through joint boards, with one representative from each state. Where more states are involved, the use of joint board machinery is discretionary with the Commission.

Hotel Edison Houses 250 Accessory Displays

NEW YORK—Two hundred and fifty manufacturers and sales representatives exhibited their products in the Third Annual Automotive Accessories Show on the third, fourth, fifth and sixth floors of the Hotel Edison, 47th Street just west of Broadway, during New York show week.

Homer Davidson Joins Auto Credit Service

H. G. Albrecht of AC Is Elected President

DETROIT — Homer H. Davidson, for the past two years with the National Credit Office and prior to that for six years manager of the Detroit office of the Motor & Equipment Association, has joined the Automotive Credit Service, formation of which was announced last week by Automotive Parts and Equipment Manufacturers, Inc.

The officers of the new credit organization, which will cover both manufacturers and jobbers, are H. G. Albrecht, credit manager, AC Spark Plug Co., president; C. O. Chesnut, treasurer of McCord Radiator & Mfg. Co., vice-president; W. D. Zahrt, assistant treasurer, Firestone Tire & Rubber Co., secretary and treasurer. These officers, together with B. J. Adams, assistant secretary of Motor Wheel Corp., and M. A. Moynihan, secretary and treasurer of Gemmer Mfg. Co., comprise the executive committee.

The finance committee consists of R. M. Fisher, treasurer of Midland Steel Products; G. McAninch, assistant secretary and treasurer of the Victor Mfg. and Gasket Co.; W. M. Balliet, treasurer of Dall Mfg. Co., and W. D. Zahrt, ex-officio.

An announcement of rates to be charged and of the balance of the organization's personnel is expected shortly.

Commercial Body Hearing To Resume January 26

WASHINGTON — Public hearing on the code of the commercial vehicle body industry, which opened Jan. 11, will be resumed on Jan. 26. At the opening session, minimum wages, differentials between male and female workers and between North and South, terms of sale were the major points of contention. Objection was also made to the proposal to forbid the establishment of new plants for a period of 18 months.

Kellogg Announces New Organization

ROCHESTER, N. Y.—The Kellogg Equipment Corporation has recently been organized with the following officers: H. M. Smith, president; J. J. Sharp, vice-president in charge of sales, and J. F. Weller, secretary-treasurer.

The new organization with headquarters at Rochester, N. Y., will operate as the sales department for the Kellogg Manufacturing Company of Rochester, the Green Castle Manufacturing Company, Green Castle, Pa., and the Oildraulic Lift Company of Memphis, Tenn.

N.R.A. Holds Hearing on Brake Lining Sales Plan

Provides Comprehensive Regulation of Friction Material Distribution

WASHINGTON—NRA held a public hearing on the proposed merchandising plan of the Brake Lining and Related Friction Products Division of the Asbestos Industry on Jan. 18.

The proposed plan covers manufacturers, their affiliates and subsidiaries, of brake linings, clutch facings and transmission linings, except only those made exclusively of metals or wood. It classifies buyers into nine groups as follows: industry manufacturer, being a member of the Brake Lining Division who purchases friction materials; equipment manufacturer; private brand account; national distributor, being one who has places of business in 20 or more widely distributed states through which he distributes to jobbers for resale; territorial distributor, being one who subdistributes at least 50 per cent of his volume to jobbers and whose annual volume is at least \$10,000; jobber; dealer, exporter and consumer. The consumer group is divided into sections which include fleet operators, large common carriers or transportation companies, state governments, the Federal Government and non-automotive buyers.

Classifications of buyers into the above groups must be filed with the Authority and all buyers in a classification must receive the same prices and terms. Schedules of prices and terms for each classification must be filed. Copies of all invoices must be made available to the Authority on request.

The plan provides standard credit terms, requires the reporting of accounts 90 days past due, forbids prepayment of freight on shipments of less than 100 lbs., calls for a service charge on cut lengths and pick-up orders amounting to less than \$5, establishes "return-goods" policy, and calls for the registration of trademarks and brands. All merchandise must be branded except that sold to industry buyers. Sale of "Seconds" is prohibited. Selling below the cost of the most efficient member of the Division, is unfair. Long and short forms of standard warranty are included in the plan and the use of one or the other is mandatory. The code also contains a list of unfair practices which follows the usual lines.

GMT Will Hold 3 Day Sales Meeting

DETROIT—Zone managers and distributors of General Motors Truck Co. from all parts of the United States will assemble here on Jan. 22, for a three-day conference with

Vice-President and Director of Sales, J. P. Little.

During the business and organization meeting, which will be held at the GMC offices in Pontiac, the complete sales program for 1934 will be outlined and various phases of sales promotion activity and stimulation will be presented by department heads. President Paul W. Seiler will welcome the visitors upon their arrival at the factory Monday morning.

Officials of the General Motors Corporation and executives from various divisions will also be in attendance.

Following the sales conference in Pontiac there will be a series of field meetings throughout the country with General Motors Truck salesmen and dealers participating, these conferences being held at zone offices and distributor points. Other field meetings are also in the process of preparation for the purpose of introducing newly added models to customers and prospects. Complete details of these meetings will be outlined during the conference.

Motor Bus Operators Given Transit Code Exemptions

WASHINGTON—Exemptions from labor provisions in transit codes have been granted by National Recovery Administrator Hugh S. Johnson to three street car and bus companies. The successful applicants are the Texarkana (Texarkana, Tex.-Okla.) Street Railway Co., the Poughkeepsie & Wappingers Falls Railway Co., and the Warren (Ohio) Transportation Co. In the two latter cases, taxicab competition was a primary reason for the exemptions.

Motor Boat Show Opens

NEW YORK—The 1934 pleasure boat season was officially launched here on Jan. 19, with the opening of the 29th annual National Motor Boat Show in Grand Central Palace.

A fleet of more than 100 motor yachts, family cruisers, runabouts and sailing craft went on review together with an extensive array of marine engines and every conceivable boating accessory and gadget produced by the marine trade. One hundred and fifty of the country's leading boat, engine and accessory manufacturers are participating in the national show.

Acheson Raises Pay

PORT HURON, MICH.—The Acheson Oildag Co. has increased all wages and salaries 5 per cent, effective Jan. 1, 1934.

McMullan Elevated

O. W. McMullan has been appointed chief metallurgist of Timken-Detroit Axle Co. He was formerly in charge of metallurgical research at Timken.

Steel Operations Rise as Auto Buying Expands

Water-Borne Pig Iron Deliveries Get Allowances under NRA Code

NEW YORK—Assurance of a steady upward trend in automotive demand from now on is reflected in this week's sharply higher operating rate of Mahoning and Shenango valley flat steel mills. A good many of the finishing mills are rolling sheets and strip in anticipation of orders from their regular customers, but for the most part a very encouraging volume of business, especially so from parts makers, furnishes the backbone of operating schedules.

American Iron & Steel Institute figures for the current week place the rate of steel ingot production at 34.2 per cent, an increase of 11.4 per cent over the preceding week and on the whole a like rate of improvement is noted in operations of Youngstown district finishing mills. In the Chicago district, however, there has been a slight recession, although automotive specifications have held their own.

What with a further clearing up of the monetary situation, the steel market sees nothing but continual improvement of demand in the offing, so much so that some producers now predict twice the present rate of operations by the time the second quarter of the year rolls around.

So far the extent to which the market's price structure is likely to be affected by the impending fiscal changes remains anybody's guess. While consumers pay somewhat more for their steel today than they did a year ago, the advance compared with that in commodity prices in general has been very slight, and a conservative appraisal by automotive manufacturers of future costs must take into consideration the possibility of higher steel prices as the result of this week's Washington developments.

Pig Iron—Better inquiry is noted in most markets. By resolution of the Code Authority allowances on water-borne deliveries are sanctioned, Saginaw and Muskegon, Mich., being among the ports so favored. Code prices continue unchanged.

Copper—Following good-sized transactions on an 8-cent basis, the market hardened under the influence of the President's announcement of the new monetary policy, and producers as well as custom smelters turned offish.

Tin—Straits tin was quoted at 53 cents at the opening of the week, about 1 cent higher than at the close of the preceding week, the advance being due to the rise in Sterling exchange. Although the tin deposits of the Belgian Congo are only beginning to be exploited, they are expected to augment the world's supply by 10 per cent before very long, and in time may alter the tin situation as much as the Congo output of copper altered the position of that metal.

L. L. Siegfried Named

TOLEDO—L. L. Siegfried has been appointed executive vice-president of Defiance Spark Plugs, Inc., according to a recent announcement by Raymond P. Lipe, president.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

The gradual rise in business activity that began during the early part of December was continued last week. Both retail sales and wholesale buying showed an improvement. General business levels now make a favorable showing in comparison with those a year ago. Consumer buying power was increased by further gains in employment. Most major industries registered advances during the week.

Carloadings Hold Up-Trend

Railway freight loadings during the week ended Jan. 6, totaled 499,939 cars, which marks an increase of 49,317 cars above those during the preceding week, an increase of 60,470 cars above those a year ago, and a decrease of 71,739 cars below those two years ago. The Shippers' Regional Advisory Boards estimate the volume of car loadings during the first quarter of this year at 6.5 per cent above that in the corresponding quarter last year.

Retail Sales Better

The Federal Reserve Board's adjusted index of department store sales for December stood at 68, as against 65 for November and 70 for October.

Power Output Gains

Output of electricity by the electric light and power industry in the

United States during the week ended Jan. 6, was 9.7 per cent above that in the corresponding week last year.

Prices Higher

The farm price index of the Bureau of Agricultural Economics on Dec. 15, stood at 68, as against 65 a month earlier and 52 a year earlier. The index of prices paid by farmers on Dec. 15, was 118, as against 117 a month earlier and 103 a year earlier.

Oil Production Lower

Average daily crude oil production for the week ended Jan. 6, amounted to 2,165,950 barrels, which was 17,050 barrels below the Federal quota, as against 2,139,850 barrels for the preceding week and 1,777,450 barrels for a year ago.

Professor Fisher's index of wholesale commodity prices for the week ended Jan. 13, stood at 72.0, as against 72.0 the week before and 71.8 two weeks before.

Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended Jan. 13, showed decreases of \$2,000,000 in holdings of discounted bills and of \$8,000,000 in holdings of bills bought in the open market. Holdings of government securities remained unchanged.

Highway Transport Yields \$330,000,000 Rail Revenue

NEW YORK—In the year just closed, while automobile production was comparatively low, railroad shipments resulting from the manufacture and use of motor cars and the building of highways exceeded two million six hundred thousand carloads and paid the railroads 330 million dollars in freight charges, according to Alfred H. Swayne, vice-president of General Motors and of the N. A. C. C.

It can be said that almost one dollar of every eight dollars railroad freight revenue last year came from traffic created by highway transportation. Shipments of gasoline for automobile uses reached nearly 1½ million carloads. Of the freight classified by railroads as Products of Manufactures, automotive freight

represented 31 per cent of the total.

This percentage of automobile freight to the total has increased during the depression. In 1929 it was only 23 per cent.

Kinner Develops Seven-Cylinder Aircraft Engine

GLENDAL, CAL.—Kinner Air-plant & Motor Corp., Ltd., has added to its line of airplane engines, the C-7-300, an air-cooled, radial seven-cylinder engine developing 300 hp. at 1800 r.p.m. It is related to the Kinner C-5, a five-cylinder radial, having the same bore of 5½ in., but the stroke, which is 6 in., is ¼ in. more than in the C-5. These cylinder dimensions give a displacement of 1044 cu. in. A compression ratio of 5.25 is used. Over-all dimensions are

51 5/16 in. (diameter) by 44½ in. (length), and the mounting-bolt circle has a diameter of 20 in. The weight of the engine dry, and without carburetor air-heater, exhaust collector ring, starter, and propeller hub, but including the hub nut, is 575 lb. Equipment includes a Stromberg carburetor and two Scintilla magnetos. The crankshaft has a No. 30 propeller end. Provision for the installation of a supercharger is made in the engine. Provision is made also for the use of 6-in. bore cylinders and it is stated that with these cylinders and supercharging the engine will develop 420 hp.

Truckers To Fight Federal Regulation

Will Request Legislation Barring U.S. Loans to Rails Offering Below-Cost Rates

WASHINGTON—The trucking industry wants an opportunity to work out its own salvation under its code of fair competition without interference from Federal regulation. Furthermore, it wants certain restrictions placed by Congress on the railroads so that the latter may not continue to undercut their truck competitors with rates said to be non-compensatory.

These and other requests were embodied in a memorial approved by the directors of the American Trucking Associations, Inc., and sent today to General Hugh S. Johnson, Federal Coordinator of Transportation Joseph B. Eastman and members of the Senate and House Committees on interstate commerce.

In opposing Federal regulation of their industry at this time, the truckers contend that the Code, now before General Johnson for approval, will provide the necessary regulation to bring about stabilization in the industry. Because of the far-flung nature of the trucking business and the millions of operators so engaged, they believe more effective control can be exercised through the medium of the code than can be accomplished by a centralized Federal agency.

"There is not sufficient data available anywhere," said Ted V. Rodgers, president of the Association, "on which to predicate intelligent regulation of the trucking industry. The code will furnish such data. Under the code a closer degree of organization of operators will be developed which is an essential prerequisite to effective regulation of the industry."

E. J. Kearney

MILWAUKEE—E. J. Kearney, secretary and treasurer, Kearney & Trecker Corp., a prominent figure in the machine tool industry, died Jan. 12, after an attack of pneumonia. Mr. Kearney had been in ill health for several months.

Exporters Urge Tariff Powers for President

Pyke Johnson Sees New Deal Foreign Policies Aiding Export Markets

NEW YORK—Definite recovery in 17 nations as reflected by studies of the Department of Commerce, our increased trade both in the export and import fields, and crystallization of sentiment in the direction of a reduction in world tariff barriers were among factors cited today by Pyke Johnson, vice-president of the National Automobile Chamber of Commerce, as the outstanding developments of 1933 in foreign trade.

The talk made at a meeting of the Overseas Automotive Club, Thursday, Jan. 11, followed the passage of resolutions by members of the Club, urging Congress to support the President by granting him broad powers to negotiate and apply the benefits of reciprocal tariff treaties between the United States and other nations.

In his talk, Mr. Johnson pointed out that there had been a 30 per cent increase in the exportation of automobiles and parts during the year and that there had been an increase in the importations of 68 out of 105 general items surveyed by the Department of Commerce.

"A new policy looking forward to the protection of American trade abroad as well as at home is being developed at Washington by men of broad understanding of the favorable effects upon employment at home of increased foreign trade," said Mr. Johnson.

"The realistic statements of the Secretary of Agriculture have done much to impress the necessity of providing world markets for our large surplus agricultural products, and the trend in the tide of nationalistic isolation has receded sharply in the past few months.

"The liquor situation has provided an ideal laboratory for a practical test of the application of bargaining tariffs. The result justifies the belief that negotiations, based upon a careful consideration of all the economic elements, would result in an early lowering of tariff barriers with far-flung favorable effects upon employment.

"The great mission accomplished by Secretary Hull and members of his delegation at Montevideo paves the way for a betterment of the good-will already existing between the nations of the two continents. The resolutions which were passed there pave the way for a new flow of trade which will undoubtedly result as and when Congress gives the President power to enter into negotiations.

"The great work of American engineers under the direction of the Bureau of Public Roads, acting in co-operation with engineers of Central

American countries, has focused attention upon the material development which has already taken place in the Inter-American highway. The day is not far distant now when hundreds of thousands of people will be finding new roads to travel and new customs to see in the Southern highway.

"The far-reaching economic implications of this development are among the important favorable factors in the situation as 1934 begins."

Mr. Johnson commented also upon the budget message of the President as a forward step in getting immediately before the American public the whole story of the financial problems which face the country. The response, he said, has been a sweeping vote of confidence which, perhaps more than any other one thing, will tend to promote trade and employment both at home and abroad.

Aluminum Industries Names McIlroy Sales Manager

CINCINNATI—Resignation of C. W. McDaniel, director of sales and advertising for Aluminum Industries, Inc., and a reorganization of the sales and advertising departments, has been announced by H. J. Hater, treasurer and general manager of the company.

Under the new set-up, Bruce V. Keller, district manager, has been made advertising manager and W. E. McIlroy, in charge of field sales, becomes sales manager.

Michigan Employment and Payrolls Maintain Uptrend

DETROIT—Figures on employment in the automotive industry in Michigan during December showed 156,586 employees compared with 134,714 in November and 135,039 in December, 1932. These figures are based on reports of 96 companies and compiled by the State Department of Labor and Industry in Lansing.

Aggregate weekly payrolls during December totaled \$3,178,456 against \$2,845,839 in November and \$2,690,638 in December, 1932.

Average weekly earnings per capita were \$20.30 in December, \$21.12 in November and \$19.92 in December the previous year.

Lubrication Engineers Organize New Society

CINCINNATI—The American Society of Lubrication Engineers has been organized and headquarters established in the Gwynne Building in this city. Officers of the new society are K. K. Otto, president; F. W. Way, first vice-president; F. A. Osborne, second vice-president, L. F. Paul, treasurer, and F. C. Otto, secretary-general.

NACC Protests Rise in Export Freight Rates

Says Increase Would Close Southern Ports to Automotive Traffic

WASHINGTON—The National Automobile Chamber of Commerce has filed with the Interstate Commerce Commission exceptions to the proposed report of Examiner Harris Fleming which approved of rates proposed by eastern lines on exports of passenger and freight automobiles through southern ports. The examiner also recommended that the export rates shall not be less than 50 per cent of the domestic rates applicable to the same commodities between the same points, subject to a further minimum of 10c per car mile where the carload minimum weight is less than 40,000 lb.

The Chamber, through V. Laird and K. A. Moore, says that rates on the basis recommended would be so high that they would for the most part prohibit export shipments of passenger and freight automobiles and chassis by way of southern ports from the major automobile producing territory, including such points as Detroit, Flint and Lansing, Mich., Toledo, and Cleveland, Ohio, etc. Shippers, it is stated, would be compelled to route the traffic by way of northern ports.

The briefs maintain that export rates from points in Central Freight Association territory to the southern ports should be no higher than the rates proposed by the southern carriers. Higher rates, it is pointed out, would prevent the southern lines from participating in the business and would practically close the southern ports to the traffic.

Lincoln Expands Output

DETROIT—The Lincoln Motor Company will increase its production schedule 33 1/3 per cent on Feb. 1. February production will total 400 12-cylinder cars, according to present estimates. In addition to the increased production scheduled for February a 20 per cent increase in daily production during the balance of January has been put into effect. Plans also are under way for substantial increases in the original production schedules of Lincoln cars in March and April, it was said.

Ralston Names Vorberg

DETROIT—D. E. Ralston, vice-president and general sales manager of Olds Motor Works, has announced the appointment of Marvin P. Vorberg as sales promotion manager for Oldsmobile. Mr. Vorberg joined the Oldsmobile sales promotion department in 1931 and was formerly both a retail sales manager and manager of an Oldsmobile dealership.

Bus Authority Asks NRA For Power Over Tariffs

Contends Rate Control Necessary to Prevent Cut-Throat Competition

WASHINGTON—A story of cut-throat competition that threatens a state of demoralization was told yesterday to Deputy Administrator E. E. Hughes by representatives of the Code Authority of the motor bus industry at a hearing on a proposed amendment to authorize the Code Authority to establish rates.

The proposed amendment was presented by John M. Meighan, secretary of the Code Authority, and supported by Ivan Bowen, general counsel for the Code Authority; P. K. Wadsworth, president, Great Eastern Stage Lines, and L. H. Bristow, director of the National Motor Bus Traffic Association, Cleveland. There was no opposition to the amendment.

The deputy was told that at present there is no uniformity of rates and that the rates are changing almost from day to day and are solely determined by competition. The result is, it was declared, that in some cases rates are so low that the percentage of loss is high and that in few cases are the operators showing a profit.

Although the industry itself was held responsible for most of the trouble, the attention of the deputy was directed to the low excursion rates, particularly the Sunday excursion rates, put on by many railroads, especially in the South.

An incidental feature of the hearing was the obtaining of the opinions from two witnesses of suggestions that their industry might be served best by having rates regulated by the Interstate Commerce Commission.

Following is the text of the amendment proposed:

"On complaint by any passenger carrier, that any rates, fare or charge for transportation or service or any rule or regulation in connection therewith is unfair, the Code Authority after notice and hearing is authorized and empowered to determine and prescribe subject to review by the Administrator what will be a fair and reasonable rate, fare, or charge to be published and collected, or rule or regulation to be observed, for the transportation or service rendered, and thereafter, unless approved by the Code Authority subject to review by the Administrator, no passenger motor carrier shall publish, demand, or collect any rate, fare, or charge for such transportation or service less than the rate, fare, or charge so prescribed and shall adopt the rule or regulation so prescribed and conform to and observe the same."

Budd Labor Hearing

(Continued from page 81)

the Budd company had violated Section 7A of the Recovery Act and recommending immediate action to compel compliance.

The Labor Board's decision in the case, issued Dec. 14, was that strikers should be reinstated and an election held within 30 days, supervised by the National Labor Board, to choose representatives for collective bargaining.

In a statement issued at the time the case was transmitted to the Compliance Board, Senator Wagner said: "After the Board's decision, we were given to understand that Mr. Budd was prepared to meet employees to make some adjustment. It is now plain that those efforts have failed. Mr. Budd cannot have been under any illusion that the National Labor Board would merely drop this case. . . . In a letter to our Board, on Dec. 6, he expressed his intention to reinstate 'a great many' of the strikers and reiterated this in another letter of Dec. 16. In accord with this statement, and our advice, over 2000 strikers registered for re-employment. But according to the information which they have transmitted to us, Mr. Budd has re-employed only about 100 of them while continually hiring workers from outside."

Receiver for Glancy

WAUKESHA, WIS.—L. D. Harkrider, secretary-treasurer and acting general manager of the Glancy Malleable Corp., Waukesha, Wis., has been appointed receiver of the company in friendly court proceedings brought about by a lack of working capital. The receiver has been authorized to continue production.

Uniform Discount Proposal Delays Trailer Code Hearing

WASHINGTON—Terms of sales by manufacturers would be limited strictly to a definite uniform schedule of discounts by an amendment introduced by the trailer code's proponents at a hearing held Jan. 18 before Assistant Deputy Administrator I. D. Everitt. As submitted the code called for open prices, but the

proposed amendment would require that these prices be at least as high as cost. Because these proposals were introduced at the hearing and the advisory boards and the industry's dealers did not have opportunity to consider them, Mr. Everitt recessed the hearing until Jan. 25. Wage differential proposals also met with opposition.

Bus Authority Publishes Account Classification

WASHINGTON—Copies of the standard classification of accounts for the Motor Bus Industry are now being distributed by the Motor Bus Code Authority. The classification was prepared by the Authority in compliance with Section 2 (d), Article VI of the Motor Bus Code and has been approved by NRA. The complete classification will be used by all bus carriers having gross income in excess of \$75,000 annually. For carriers with gross income below this level, only the balance sheet and some of the income and expense accounts will be required.

John Heil, Sr.

MILWAUKEE—John Heil, Sr., general works manager of The Heil Co., Milwaukee, and elder brother of Julius P. Heil, president and general manager, died Jan. 9 after a brief illness with pneumonia. He was 62 years of age and had been associated with the Heil company for 20 years.

Mrs. Pauline H. Brooks

DETROIT—Mrs. Pauline H. Brooks, wife of Louis C. Brooks, secretary of the Kelsey Hayes Wheel Corp., died at her home here, Jan. 8.

CALENDAR OF COMING EVENTS

AUTOMOBILE SHOWS

Detroit, Mich.	Jan. 20-27
Hartford, Conn.	Jan. 20-27
Baltimore, Md.	Jan. 20-27
Boston, Mass.	Jan. 20-27
San Francisco, Calif.	Jan. 20-27
Montreal Jan. 20-27	
Pittsburgh, Pa.	Jan. 20-27
Montreal, Canada	Jan. 20-27
Rochester, N. Y.	Jan. 22-27
Harrisburg, Penna.	Jan. 24-27
Chicago Jan. 27-Feb. 3	
Washington, D. C.	Jan. 27-Feb. 3
Indianapolis Feb. 3-9	
St. Paul Feb. 3-10	
Toledo, Ohio Feb. 3-9	
Camden, N. J. Feb. 3-10	
Los Angeles Feb. 3-11	
Omaha, Neb. Feb. 5-9	
Lansing, Mich. Feb. 7-10	
Rapid City, S. D. Feb. 7-10	
Springfield, Ill. Feb. 8-10	

Kansas City, Mo.	Feb. 10-17
Syracuse, N. Y.	Feb. 10-17
Black Hills, S. D.	Feb. 15-17
Des Moines, Ia.	Feb. 19-24
Evansville, Ind.	Feb. 20-24
Denver, Colo.	Feb. 20-28
Peoria, Ill.	Feb. 21-25

OTHER SHOWS

Road Show, Chicago	Jan. 22-27
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CONVENTION AND SHOW

Natl. Assoc. of Engine and Boat Mfrs., New York City.....	Jan. 19-27
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CONVENTIONS

American Road Builders' Association, Chicago	Jan. 22-27
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MEETINGS

S.A.E. Annual Meeting, Detroit.....	Jan. 22-25
National Automobile Dealers Assoc., Chicago	Jan. 29

New TAG Certified Hydrometers

The C. J. Tagliabne Mfg. Co., Brooklyn, N. Y., makers of oil testing instruments and other laboratory equipment, announces the development of the new line of Tag Certified Hydrometers.

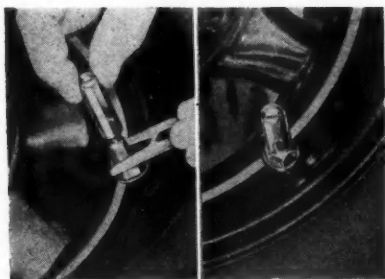
These instruments are supplied in plain and combined forms and are superior to the older models in accuracy, convenience and construction.

The metal thermometer scale, the first ever developed for the hydrometer, is much longer and the wide graduations allow temperature determinations to be made as close as $\pm 0.25^\circ \text{F.}$, which is important, since a variation of $\pm 1^\circ \text{F.}$ can introduce an error of as much as $0.2^\circ \text{A. P. I.}$ in gravity readings.

All Tag Certified Hydrometers are supplied with a signed accuracy certificate of guarantee.

Schrader Ezemount Valve Assembly

A new valve assembly known as the Ezemount has been created by A. Schrader's Son, Inc., of Brooklyn, N. Y., and will appear on a considerable number of 1934 model cars.



Schrader-Ezemount valve assembly—Figs. 1 and 2

The assembly provides the features of a chromium finish, adequate length for insertion, and minimum protrusion when definitely in place. As may be seen from Fig. 1, the design allows for tightening of the hexagon nut from outside the rim. No rim nut is used, so the assembly may pull back through the rim hole in case the tire becomes deflated.

Fig. 2 shows the Ezemount cap applied to lengthen the assembly for easy mounting. The valve-holding tool is applied to keep the valve stem in position until the tire is inflated.

Automotive Industries

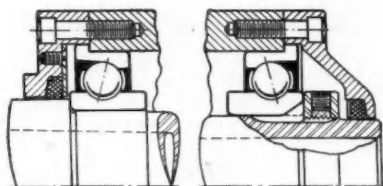
NEW DEVELOPMENTS

Automotive Parts, Accessories and Production Tools

Flanged Precision Spindle Bearings

A line of precision ball bearings flanged for use on spindles has been announced by the New Departure Manufacturing Co., Bristol, Conn. The following advantages are claimed for this new product:

1. The shoulders are on the bearing instead of in the housings.
2. Thus, it is possible to bore hous-



New Departure flanged spindle bearings

ings straight through at one set-up, thereby assuring perfect alignment.

3. The bearings are separable for quick and easy assembly.
4. Inner rings are extra wide to assure firm non-deflecting seating and are key-slotted so that they may be locked to prevent creeping about the shaft. Preload is applied through the inner rings.

These bearings are supplied in sizes from 30 mm. up to 130 mm. bore, to precision specifications, and are obtainable in two bore sizes for each standard outside diameter.

Twenty-five Pound Electric Furnace

Pittsburgh Lectromelt Furnace Corp., Pittsburgh, Pa., has made available for metallurgical work a 25-lb. Lectromelt furnace. This small size arc furnace operates with either direct, indirect or submerged arcs. The furnace body may be conveniently re-

moved from its stand and the melt poured off as from a shank ladle. The roof and electrode arms are arranged for tilting back by means of a lever mechanism so as to facilitate quick and convenient charging. The furnace may also be "tapped" when that is desired.

The furnace is usually operated direct on 110 volts A.C. or with a transformer on 220,440 or even higher voltage power supplies. It has a wide range of application such as melting, refining and alloying irons and steels, melting ferro alloys and non-ferrous metals and alloys for fusion investigations and ore reductions, etc.

Cut-Off Valve for Spray Guns

A new, patented fluid cut-off valve, for use with DeVilbiss spray guns, has been developed by the DeVilbiss Co., Toledo, Ohio. This improvement permits the operator to drain the gun of fluid, or to blow out any obstruction in the fluid tip without disconnecting the gun from the hose. The valve is so designed that, regardless of the position of the lever, the fluid hose cannot drain through the side part.

Stripes Smooth Or Rough Surfaces

Paasche Airbrush Co., Chicago, Ill., has just brought out the UARF 2 Stripper of convertible type, equipped with adjustable shields for striping from $\frac{1}{4}$ to 4 in. wide. It can be used for striping mouldings of any contour, flat work, frames or other article where a stripe of controlled width is desired. Can be used in horizontal, vertical or any angular position on smooth or rough surfaces. Solid stripe, shaded or stippled effect, can be obtained with one convertible tool. The adjustable roller shields can be set for stripes from $\frac{1}{4}$ in. to 4 in. wide. Multipleheads of different sizes can be used for light or heavy colors, providing a variety of finishes.

January 20, 1934

BAKER

DRILLING : BORING and TAPPING EQUIPMENT

A complete line including gear or hydraulic feed, single or multiple spindle, vertical, horizontal and way type.

BAKER BROTHERS, INC.

TOLEDO, OHIO

ELECTRIC AND FUEL FIRED FURNACES

ELECTRIC FURNACE

CO.

SEND FOR BULLETINS
SALEM OHIO

FELT

Capacity to Meet Fluctuating Schedules

AMERICAN FELT COMPANY

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BROS. & CO.

ROCKFORD, ILLINOIS, U.S.A.

MULTIPLE SPINDLE DRILLING AND TAPPING MACHINES.
AUTOMATIC SCREW MACHINES. SPECIAL MACHINERY

BUYERS' GUIDE

Automotive Products and Factory Equipment Manufactured by Advertisers in This Issue

See Alphabetical List of Advertisers on Page 36

This Advertisers' Index is published as a convenience, and not as part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

Alloys

Ferro

International Nickel Co.
Vanadium Corp. of Amer.

Non-Ferrous

International Nickel Co.

Axles

Park Drop Forge Co.

Bearings, Anti-Friction

Ball

Fafnir Bearing Co.

Bending & Straightening

Machines

Chambersburg Engineering Co.
National Machinery Co.

Blanks

Forged

Bethlehem Steel Co.

Bolts & Nuts

Upson Nut Div.
Republic Steel Corp.

Boring Machines

Baker Brothers, Inc.
Foote-Burt Co.

Brakes

Mechanical

Stewart-Warner Corp.

Power

Stewart-Warner Corp.

Bumpers

Stewart-Warner Corp.

Bushings

Fibre

Continental-Diamond Fibre Co.

Cable

Brake or Cutout Control
Amer. Steel & Wire Co.

Ignition, Starting & Lighting

Amer. Steel & Wire Co.

Channels for Glass

Felt

American Felt Co.

Cleaners

Metal

American Chemical Paint Co. (Rust Preventive)

Controllers, Electric

Welders
General Electric Co.

Couplings

Pipe & Tubing
National Tube Co.

Crankshafts

Park Drop Forge Co.

Cutters (Keyseating)

Baker Brothers, Inc.

Drilling Machines

Baker Brothers, Inc.
Foote-Burt Co.
Greenlee Bros. & Co. (Multiple Spindle)

Enamels

American Chemical Paint Co. (Rust Proofing)

Felt

American Felt Co.

Fibre, Rods, Sheets, Tubes

Continental - Diamond Fibre Co.

Forgings

Park Drop Forge Co.

Furnaces, Electric

(Annealing, Carburizing, Heat Treating, Forging and Welding)
Electric Furnace Co.

Gaskets

Felt
American Felt Co.

Gear Material, Non-Metallic

Continental - Diamond Fibre Co.
General Electric Co. (Plastics Dept.)

Gears, Timing, Non-Metallic

Continental - Diamond Fibre Co.
General Electric Co. (Plastics Dept.)

Hammers

Power

Chambersburg Engineering Co.
National Machinery Co.

Heaters, Car

Stewart-Warner Corp.

Heat Treating

Barnes Co., Wallace
Barnes-Gibson-Raymond, Inc.
Gibson Co., Wm. D.

Insulating Material

Continental - Diamond Fibre Co.
General Electric Co. (Plastics Dept.)

Keyseaters

Baker Brothers, Inc.

Lathes

Automatic Chucking
Potter & Johnston Machine Co.

Turret

Potter & Johnston Machine Co.

(Continued on page 34)

Classified Advertising

MANUFACTURERS, IMPORTERS, EXPORTERS. Independent trade representative, attending British Industries Fair, London and Birmingham during February, desires additional clients. Cost will be nominal. Box 858 c/o Automotive Industries.

HELP WANTED

Assistant for Sales and Advertising Manager of a large eastern corporation. In not over a two-page letter outline accomplishments, particularly referring to sales promotion work, references and salary desired. Box 859, Automotive Industries.